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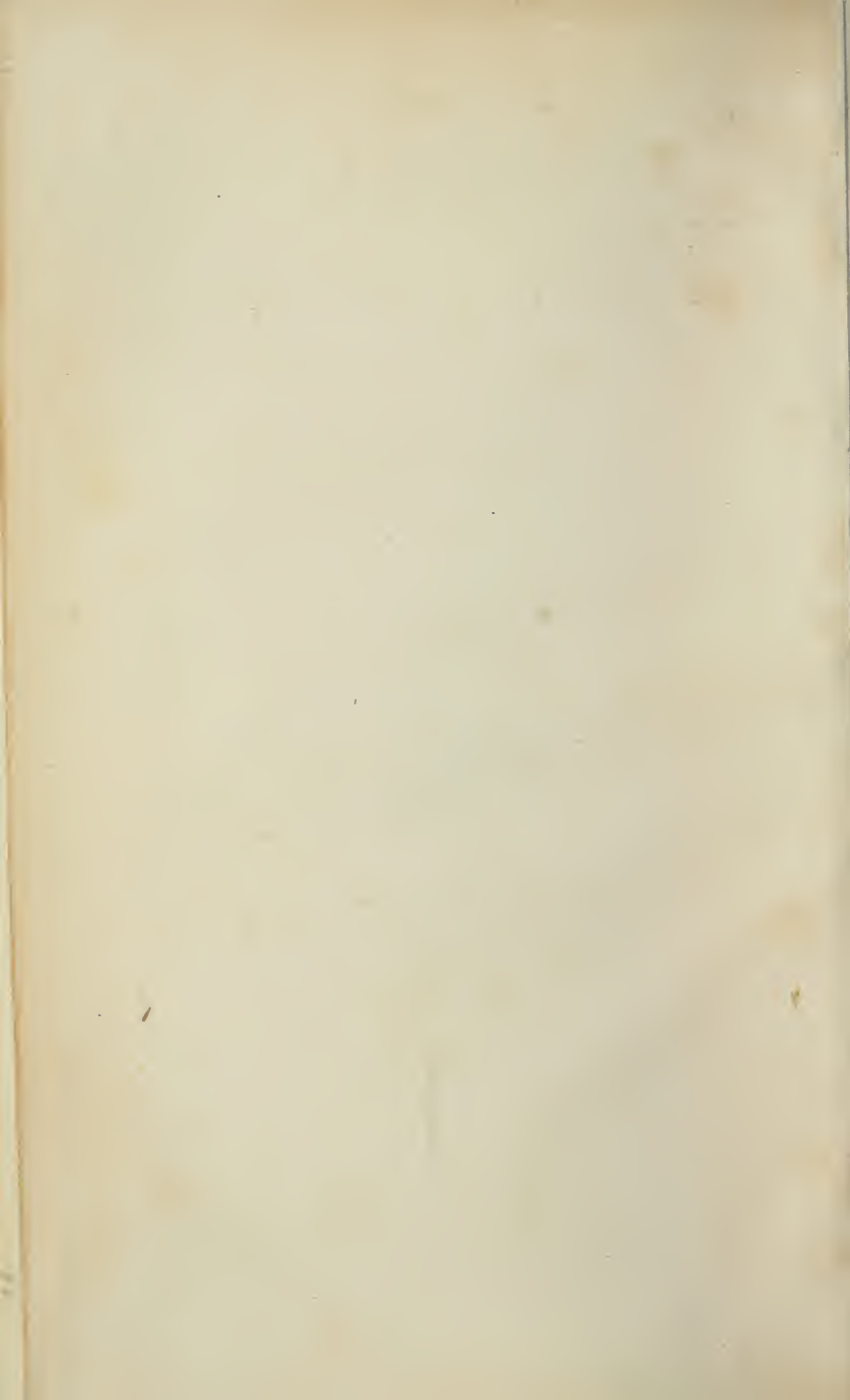
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THE  
AMERICAN  
JOURNAL OF PHARMACY.

PUBLISHED BY AUTHORITY OF THE

PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

Professor of Pharmacy in the Philadelphia College of Pharmacy.

ONTARIO  
COLLEGE OF PHARMACY  
44 GERRARD ST. E.  
TORONTO.

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PUBLISHING COMMITTEE FOR 1853,

PROFESSOR BRIDGES,  
ALFRED E. TAYLOR,

CHARLES ELLIS,  
EDWARD PARRISH.

**California College of Pharmacy**

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TORONTO,

THE  
AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1853.

PROCEEDINGS OF THE NATIONAL PHARMACEUTICAL  
CONVENTION.\*

HALL OF THE PHILADELPHIA COLLEGE OF PHARMACY, }  
October 6th, 1852, 4 o'clock, P. M. }

In the absence of Dr. Guthrie, President of the Convention held last year, the Convention was called to order by Mr. A. B. Taylor, of Philadelphia, the Secretary. Mr. Coggeshall, of New York, informed the meeting that in a letter lately received from President Guthrie, dated at Louisville, he stated that circumstances had rendered his presence impossible, but that his best wishes would attend the Convention in its endeavors to elevate the profession.

On motion of Mr. Procter it was resolved, that Mr. Coggeshall, of New York, be appointed President *pro tempore*, Mr. Taylor acting as Secretary.

On motion it was resolved, that the President should appoint a Committee of three to examine the credentials of the delegates present. Whereupon, Messrs. Ellis, of Philadelphia, Colcord, of Boston, and Laidley, of Richmond, were commissioned to retire on that duty, and were also directed to report a resolution in reference to the druggists and apothecaries who were present with the desire of attending the Convention without being delegated.

\*[Although a number of our subscribers have received copies of the proceedings of the Convention as published in pamphlet form by the Executive Committee, yet we deem it expedient to insert a full account of the transactions of the Convention as a permanent record of the progress of Pharmacy.—EDITOR.]

This Committee reported that satisfactory credentials of the appointment of the following gentlemen as delegates had been offered :

*From the Massachusetts College of Pharmacy.*—Joseph Burnett, Samuel M. Colcord, Dr. Samuel R. Philbrick.

*From the College of Pharmacy of the City of New York.*—George D. Coggeshall, L. S. Haskell, John Meakim.

*From the Richmond Pharmaceutical Society.*—Alexander Duval, John Purcell, Joseph Laidley.

*From the Cincinnati College of Pharmacy.*—William B. Chapman, Charles Augustus Smith, Edward S. Wayne.

*From the Philadelphia College of Pharmacy.*—Daniel B. Smith, Charles Ellis, William Procter, Jr.

*From the Maryland College of Pharmacy.*—Dr. David Stewart, George W. Andrews.

And, Henry F. Fish, of Waterbury, Connecticut, as the representative of the apothecaries and druggists of the cities of Hartford and Middletown, Connecticut.

The following resolution was also offered :

Resolved, That those gentlemen whose interest in the objects of the Convention has induced them to meet with us on this occasion, be invited to take seats in the Convention and fully participate in its proceedings.

Signed,

C. ELLIS,	}	<i>Committee.</i>
S. M. COLCORD,		
JOS. LAIDLEY,		

The Report, including the resolution, was adopted, and the Committee continued, to act on the claims of delegates or others not yet arrived.

On motion the roll was called, and the following delegates answered to their names :

Daniel B. Smith,  
Charles Ellis,  
William Procter, Jr.  
Joseph Burnett,  
Samuel M. Colcord,  
Samuel R. Philbrick,  
Alexander Duval,

Joseph Laidley,  
David Stewart,  
Charles Augustus Smith,  
George D. Coggeshall,  
Llewellyn S. Haskell,  
John Meakim,  
Henry S. Fish.

The following gentlemen were then invited to seats in the Convention, viz :

Charles L. Bache, of San Francisco, California.

Eugene Dupuy, of New York.

Edward Parrish, }  
Alfred B. Taylor, } of Philadelphia.

On motion it was resolved, that a Committee of one from each delegation be appointed to nominate officers for the Convention, each delegation suggesting its representative.

Whereupon Mr. Procter, of Philadelphia, Dr. Philbrick, of Boston, Mr. Duval, of Richmond, Dr. Stewart of Baltimore, Mr. C. A. Smith, of Cincinnati, Mr. Meakim, of New York, Mr. Fish of Connecticut, were chosen.

The Committee retired, and after conferring together reported the following nominations:

DANIEL B. SMITH, of Philadelphia, for President.

GEORGE W. ANDREWS, of Baltimore, }  
SAMUEL M. COLCORD, of Boston, } for Vice Presidents.  
C. AUGUSTUS SMITH, of Cincinnati, }

GEORGE D. COGGESHALL, of New York, for Recording Secretary.

WM. PROCTER, JR., of Philada., for Corresponding Secretary.

All of whom were duly elected, and the Committee discharged.

After the officers had taken their seats, the Committee appointed at the Convention held at New York, October, 1851, "to act as a Standing Committee, to collect such information as may be deemed valuable, together with memorials and suggestions from Medical and Pharmaceutical Associations, to be presented to the next Convention," made a Report, which was read and accepted.

[This Committee, consisting of Messrs. Procter, Coggeshall and Colcord, embraced suggestions in their report relative to nearly all the subjects brought forward in the Convention, and to some not reached by it, but the paper is too long for insertion in our pages at this time.—EDITOR.]

On motion of Mr. Coggeshall, it was resolved to appoint a Business Committee to consider the report just read, and to propose subjects for the consideration of the Convention as they may deem expedient, and report to the next sitting.

The President appointed William Procter, Jr., Joseph Burnett, Alexander Duval, Dr. David Stewart, Charles A. Smith, and L. S. Haskell.

On motion of Mr. Burnett, Henry F. Fish, and George D. Coggeshall were added to the Committee.

On motion of Mr. Procter it was resolved, that when the Convention adjourns, it shall adjourn to 10 o'clock, A. M. to-morrow.

On motion of Mr. Procter it was resolved, that all pharmacutists who feel an interest in the proceedings of the Convention be invited to attend its deliberations.

On motion of Mr. Coggeshall it was resolved, that an invitation be tendered to professors George B. Wood, M. D., Franklin Bache, M. D., Joseph Carson, M. D., and to the Professors of the Philadelphia College of Pharmacy, to attend the sittings of this Convention.

The Convention then adjourned.

*Second Sitting, Oct. 7th, 10 o'clock, A. M.*

President in the Chair.

The roll was called and most of the delegates appeared in their seats.

The minutes of the last sitting were read and approved.

The Business Committee reported a draft of a Constitution in which they were united, except on the proposed second section, of which two drafts were presented, upon which the Committee were nearly equally divided, which was read. The Committee also reported the draft of a proposed Code of Ethics, which was read at this time as connected with the consideration of one of the drafts of the second section of the proposed Constitution.

The Committee on Credentials here reported in favor of J. B. H. Campbell, of Cumberland, Maryland, and Charles A. Heinitsh, of Lancaster, Pennsylvania, having seats in the Convention, which was on motion adopted, and the gentlemen introduced.

Professor Bridges, of the Philadelphia College Pharmacy, invited by the resolution of yesterday, was also introduced.

The convention then proceeded to consider the Constitution by sections, postponing the consideration of the preamble, on motion of Mr. Colcord, until after the consideration of the Code of Ethics.

The first section, relative to the name of the association, was read and laid on the table for the present.

The two drafts of the second section were then read as follows :



(1st draft) "Section II. The members of this association shall consist, firstly, of delegates from regularly organized Colleges, and Societies of Pharmacy within the United States; secondly, of delegates from the apothecaries and druggists of cities and towns where no organization exists, each of such delegates representing and presenting credentials signed by ten constituents; and thirdly, of isolated pharmacutists, residing in places where the number of apothecaries is too small to send a representative by right, who shall be admitted to the meetings of the Association and participate in its transactions, provided they are introduced at the meetings by the Committee on Credentials."

(2d draft) "Section II. All pharmacutists and druggists who shall have attained the age of 21 years, whose character, morally and professionally, is fair, and who, after duly considering the obligations of the Constitution and Code of Ethics of this Association, are willing to subscribe to them, shall be eligible for membership.

"The members shall consist of Delegates from Colleges of Pharmacy and Pharmaceutical Societies, who shall present properly authorized credentials; and of other reputable pharmacutists feeling an interest in the objects of the Association who may not be so delegated, the latter being required to present a certificate signed by a majority of the delegates from the places whence they came. If no such delegates are present at the meeting, they may, on obtaining the certificates of any three members of the Association, be admitted."

An animated debate ensued on the above drafts of the second section; one part of the members were of the opinion that the members of the proposed association should come from organized societies as far as practicable, and that the representative basis should be aimed at, even for places where no organization exists, by requiring every member from such places to bring credentials from the practicing apothecaries. This would enable every section of the profession desiring to do so, to have a voice in the National Association, and by bringing them together would practically suggest the idea of organizing themselves into permanent local societies. They argued that any instances of isolated pharmacutists desiring to take part in the meetings from interest in their objects, would be met by the latter clause, by which such gen-

tlements could gain admittance by courtesy through the Credential Committee. They further argued, that if the door was thrown open as widely as suggested in the second draft, the action of the association could be influenced by the ingress of members from large cities, who might be wholly disconnected with the Societies in those cities and inimical to them. They thought that by adhering to the representative basis, Societies in cities, by extending their connections through small towns by means of associate members, would be enabled to extend their usefulness, and by authorizing said associations, as delegates, a larger surface of the profession could be represented; besides, by thus giving the right of membership to the members of organized bodies, it would be an inducement for apothecaries to form associations.

The other part of the members advocated the second draft, or something equivalent. They believed, in the present condition of Pharmacy in the United States, that a liberal basis should be adopted. Their faith in the good intentions of the mass of the apothecaries and druggists was sufficient to induce them to throw open the doors and let all enter who could bring certificates of their good standing at home, and who were willing to sign the Constitution and Code of Ethics, after having carefully considered them. They were of the opinion that the second section of the first draft would cut off all the apothecaries from cities where colleges or societies exist, except the few delegates appointed by the societies, many of whom would naturally desire to participate. They viewed the delegations from colleges as present in a two fold capacity: 1st, as representatives of the interests of their institutions in any movements of the National Association affecting them; and 2d, as members of that Association in their individual capacity, looking to the general interests of the pharmaceutical profession. They therefore considered that the association should be independent of all local bodies, at the same time that the latter through their delegates could act in and with the association if they desired. They believed if the liberal view was adopted, that even gentlemen of the opposite opinion would find that too few instead of too many would avail themselves of the opening.

The second draft, after being amended by the addition to its final paragraph of the words "provided they are introduced by the Committee on Credentials," was finally adopted.



The first section declaring that the proposed National Society should be called "THE AMERICAN PHARMACEUTICAL ASSOCIATION," was then taken up and adopted.

The other sections of the Constitution, as far as reported, in reference to the officers, and the meetings, &c., were then considered in order, and after some verbal alterations, adopted.—(See page 13.)

The Convention then proceeded to consider the Code of Ethics article by article, which was adopted without amendment, and laid on the table to await the final action on the preamble and constitution.—(See page 16.)

On motion of Mr. Procter the Convention adjourned to four o'clock, P. M.

*Third Sitting, October 7th, 4 o'clock, P. M.*

President in the chair.

On the roll being called the delegates generally were present, and subsequently Prof. Carson, invited by the resolution of yesterday, was introduced.

The minutes of the preceding sitting were read and adopted.

The President informed the Convention that the Business Committee not being ready to report, it was understood that Dr. Stewart, Examiner of Drugs, &c., at the port of Baltimore, had some statements to offer in regard to the working of the drug law at that port, and the Convention assenting, requested him to proceed.

Dr. Stewart stated that as there had been some difference of opinion among the Drug Examiners as to the intention of the law in certain cases, he desired the opinion of the Convention regarding the inferior class of Cinchona barks that come from Maracaibo, Carthagena, &c., and other articles about which there is difference of opinion among druggists. In illustration of the difficulties of the subject, he remarked that one invoice of bark, that in a commercial point of view was not esteemed, and which came invoiced at 10 cents per pound, had yielded on analysis two and a half per cent of cinchona, whilst Loxa bark, invoiced at 30 cents per pound, had afforded but a fraction of one per cent. He considered the admission of the barks in question as quite different from deteriorated or adulterated drugs, in as much as they possessed a range of power which, though inferior to the best Peruvian barks, was

yet useful, and capable of application in medicine. He therefore offered the following resolution.

“Resolved, that it is the opinion of this Convention, that all varieties of drugs, that are good of their kind, should be admitted by the special examiners of drugs and medicines.”

Pending the consideration of this resolution, Mr. Coggeshall informed the Convention that Dr. Bailey, the Special Examiner of drugs for the port of New York, had furnished, at his request, a report on the character of imported drugs coming under his supervision and on the general working of the law, which, by request, was read.—(*See Varieties.*)

A similar report from Mr. Edward Hamilton, late Drug Examiner at the port of Boston, communicated to Mr. S. M. Colcord, at his request with a view to its being presented to this Convention, was also read.

Dr. Stewart then opened the debate on the subject, arguing that drugs, of whatever virtue or variety, so that they are good of their kind, should be admitted.

In reference to barks he could say, that perhaps a larger amount of the varieties of that drug came into the port of Baltimore than any other. That the merchants in that trade were so desirous of getting the best kinds, that it was quite usual for them to import specimens by way of the Isthmus, and have them examined before ordering their invoices, in order to see if they would pass the Custom House inspector. That he had, (as Examiner at that port) chemically examined a large number of samples of the barks, both Peruvian and Carthagena, and that the latter had invariably contained more or less of the alkaloids, and were generally of good quality of their kind.

He therefore considered the fact that a drug is or may be used as an adulteration for other drugs, should not exclude it, if it is used to any extent on its own merits. In illustration Dr. Stewart remarked that the Examiner might go on a vessel and observe, side by side, two casks of oil, consigned to the same individual, one invoiced “cod-liver oil,” and the other “sperm oil.” On examination he finds that they are what they purport to be; the suspicion would arise very naturally that the latter was to be used for adulterating the former, yet should sperm oil be excluded because certain parties use it as an adulteration? He thought not,

and on the same grounds he considered that the inferior varieties of barks and of rhubarb should be admitted, although some persons may use them for adulteration.

At the request of the President, Professor Carson, of the University of Pennsylvania, addressed the Convention on the subject before it. He coincided generally with the views of Dr. Stewart, as regarded the value of the barks in question. He expressed the opinion that numerous varieties of the so called Carthagena and Maracaibo barks possessed decided medicinal virtue, that several kinds of European rhubarb were of much value in medicine, especially in times when the officinal varieties are scarce, and that these drugs should all be admitted when not deteriorated or adulterated.

Mr. Haskell, of New York, advocated the same views, more especially as related to English rhubarb, bringing forward the testimony of Dr. Pereira, to the effect that some specimens of Banbury rhubarb were almost, if not fully, equal to the Chinese drug, and even of rather higher price. He also stated that a large demand existed in this country for yellow Carthagena barks. That the house of which he was a member, sold large quantities in powder, and that the parties purchasing it, did so, knowing its origin. He was not aware of the use to which it was put, but presumed that it was employed legitimately.

Mr. Fish, of Connecticut, stated that through the part of New England that he represented, considerable quantities of the barks in question were used legitimately as a tonic; and that no instance of their being used as an adulteration of the Peruvian barks had come to his knowledge.

Mr. Coggeshall, on the other side of the question, called the attention of the Convention to the item in Dr. Bailey's report, showing that three hundred thousand pounds of these barks had been rejected at the port of New York in about two years and a half. He argued that this bark was not consumed there—that it was not used in the manufacture of the alkaloids—that the allegation that it was used for making tooth powders would hardly account for the great consumption of it, and the question naturally arose, for what purpose was it imported? Mr. Coggeshall believed that it was used extensively to grind with the Peruvian barks as an adulteration, to make an inferior extract, which could

be done cheaply and profitably, and which was largely sold as an official preparation—that many of the persons who came to our cities to buy drugs, were not able to judge of their purity, and bought them without asking any questions, save as regarded price,—and so convinced was he of the application of these false barks to these false purposes, that as a protective measure, in his opinion, they should be excluded. And also in regard to English and other European rhubarb, that the argument of Professor Carson would not hold good, while the markets were so well supplied with the Russian and Chinese varieties, to which the Banbury, regarded as the best of the European, was so very inferior. Entirely independent of this argument, however, Mr. Coggeshall considered that European rhubarb should be excluded, because of its peculiar adaptation and general use as an adulteration, owing to its fine color, which enables the adulterator to improve the appearance of the inferior Chinese variety, and to mix it with the Russian article in powder without depreciating its appearance, or as it is done to a great extent, substituted entirely for the true article.

Mr. Colcord, of Boston, advocated the latter view, and hoped that the resolution would not pass.

Other members of the Convention joined in the debate, after which the question was taken on the resolution of Dr. Stewart, and it was lost.

As the importance of the subject introduced by Dr. Stewart was fully appreciated by the Convention, at the same time that no direct course of action seemed proper for it to pursue, the following resolution was offered by Mr. Smith, of Cincinnati, viz :

“Resolved, that the whole subject of the inspection of drugs shall be referred to a Committee, who shall be instructed to confer with the Examiners, and endeavor to arrive at some practicable means of fixing standards for imported drugs.”

The resolution was unanimously adopted, and Mr. Taylor of Philadelphia, Mr. Meakin, of New York, and Mr. Burnett, of Boston, were appointed by the President to carry it into effect.

On motion of Mr. Procter, Dr. Stewart of Baltimore was added to the Committee.

The Business Committee having signified their readiness to make



a further report, the following resolutions pertaining to the subject just under consideration were read.

“Resolved, That in the opinion of this Convention, the law against the importation of adulterated drugs, chemicals, and medicinal preparations, has already effected much good by excluding large quantities of inferior drugs from the market.

“Resolved, That inasmuch as the usefulness of this law will be proportioned to the ability, and conscientious discharge of duty of the Examiners, that this Convention shall respectfully and urgently represent to the appointing power, the cardinal importance of preventing the removal of qualified Examiners on mere political grounds.

On the question being taken, they were unanimously adopted.

The Business Committee reported the following resolution relative to the sale of poisons, which was read :

“Resolved, That the subject of the indiscriminate sale of poisons, as now conducted by apothecaries, druggists and others, as regards the practicability of effecting some useful reform in the present state of the traffic, be referred to a committee of four members, to report at the next annual meeting.”

After some discussion as to what constituted a poison in the meaning of the resolution, it was adopted, and the following gentlemen were appointed by the President to carry it into effect: Mr. Procter of Philadelphia, Dr. Philbrick of Boston, Mr. Duval of Richmond and Mr. Coggeshall of New York.

The following additions to the Constitution were then brought forward by the Business Committee and acted on separately :

To Section 2d. “All persons who become members of this association shall be considered as permanent members, but may be expelled for improper conduct by a vote of two-thirds of the members present at any annual meeting.

“Every member in attendance at the Annual Meeting shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution.

“Section V. This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.”

They were adopted without a dissenting voice.

The following resolution was brought forward by the Business Committee and read :

“Resolved, That a Committee of three members be appointed to take into consideration the whole subject of secret or quack medicines, and report at the next annual meeting the result of their deliberations, whether any course can be suggested by which the Association may act efficiently in abating this great evil.”

After some discussion in which the difficulties that opposed all efforts in reference to this subject were stated, the question was taken and carried ; and the President appointed Charles A. Smith of Cincinnati, and Henry F. Fish of Waterbury, Connecticut ; when on motion of Mr. Procter, the President of the Convention was unanimously requested to act as Chairman.

The following declaration of the sentiments of the Convention, brought forward by the Business Committee, was then read and adopted :

“The subject of pharmaceutical education being considered of paramount importance by this Convention, and having been deliberated upon by its Committee, the following resolutions have been adopted, expressive of the sense of the Convention in reference to this important subject :

It is resolved,

1st. That this Convention earnestly recommends to the practising apothecaries in all sections of the United States, in places where they are sufficiently numerous, that they should organize themselves into societies, for mutual improvement as Pharmacutists, for the encouragement of Pharmaceutical literature by the formation of libraries, and for the adoption of rules of conduct calculated to elevate the character of the profession among them.

2. That as schools of Pharmacy are the most effectual aids to the student, this Convention respectfully recommends to Pharmacutists in all cities where they are numerous, to take measures for the establishment of such institutions, as powerful means of improving the education of their assistants and apprentices, and thus benefitting themselves and the public.

3. That this Convention also recommends that more attention should be given by proprietors to the claims of their apprentices or assistants, who are in course of study, as regards the facilities for learning, and the tuition which of right should proceed from them,



[the proprietors] in the absence of schools of Pharmacy; especially in the provision of the best books of reference on the several subjects that claim the attention of students of pharmacy.

4. And, That in the opinion of this Convention it is desirable that apothecaries should be more generally careful, in taking pupils or apprentices, in reference to their fitness, as regards natural endowments and preliminary education, believing that many persons who are now engaged in Pharmacy and unfitted for its duties, might thus have been prevented from misapplying their time, and abilities, in a profession for which they are not calculated."

The preamble of the Constitution\* was then read and adopted.

\*CONSTITUTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

*Whereas*, The advancement of pharmaceutical knowledge and the elevation of the professional character of apothecaries and druggists throughout the United States are objects that are dear to us in common with all well disposed pharmacutists; and *whereas* a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business;—

*Therefore*, We, the members of a Convention now met at Philadelphia, composed of apothecaries and druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the object of deliberating on the condition of our profession, do hereby resolve and constitute ourselves into a permanent association, to meet annually at such, times and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled; and do now adopt the following

CONSTITUTION.

SECTION I.

This association shall be called "*The American Pharmaceutical Association.*"

SECTION II. *Of the Members.*

ARTICLE I. All pharmacutists and druggists who shall have attained the age of twenty-one years, whose character, morally and professionally, is fair, and who, after duly considering the obligations of the Constitution and Code of Ethics of this Association, are willing to subscribe to them, shall be eligible for membership.

ARTICLE II. The members shall consist of delegates from regularly constituted Colleges of Pharmacy, and Pharmaceutical Societies, who shall present properly authorized credentials, and of other reputable Pharmacutists feeling an interest in the objects of the Association, who may not be so dele-

On motion of Mr. Procter it was resolved to proceed to the election of a Treasurer and Executive Committee.

Messrs. Bache and Taylor were appointed tellers, who reported that Alfred B. Taylor was elected Treasurer, and William Procter, Jr., George D. Coggeshall, and Joseph Burnett as the Executive Committee.

Mr. Burnett, of Boston, said that he was instructed by resolution of the Massachusetts College of Pharmacy to express the desire of that body, that the Convention would meet next in their city.

On motion of Dr. Stewart it was resolved that when this

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gated, the latter being required to present a certificate signed by a majority of the delegates from the places whence they come. If no such delegates are present at the Association, they may on obtaining the certificates of any three members of the Association be admitted, provided they be introduced by the committee on credentials.

ARTICLE III. All persons who become members of this Association shall be considered as permanent members, but may be expelled for improper conduct by a vote of two-thirds of the members present at any annual meeting.

ARTICLE IV. Every member in attendance at the annual meetings shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution.

ARTICLE V. Every local Pharmaceutical Association shall be entitled to five delegates.

### SECTION III. *Of the Officers.*

The officers of this association shall be a *President*, three *Vice Presidents*, a *Recording Secretary*, a *Corresponding Secretary*, a *Treasurer*, and an *Executive Committee* of three, which may include any of the members except the President, all of whom shall be elected annually.

ARTICLE I. The President shall preside at the meetings and preserve order. He shall nominate all committees, except a majority of the members present direct a resort to balloting or other means. He shall sign all certificates of membership, approve of all foreign correspondence, and countersign all orders on the Treasurer drawn by the Executive Committee. And he shall, at least three months previously to the annual meeting, publish a call in all the pharmaceutical and in such medical and other Journals as he may select, stating therein the objects of the Association, and the conditions of membership.

ARTICLE II. In case of the temporary absence, or inability of the President, his duties shall devolve on one of the Vice Presidents.

ARTICLE III. The Recording Secretary shall keep fair and correct

Convention finally adjourns, it will accept the invitation of the Massachusetts College of Pharmacy, and adjourn to meet as the American Pharmaceutical Association, at Boston, on the fourth Wednesday [24th] of August, 1853.

On motion, the Convention then adjourned to 9 o'clock A. M., to-morrow.

*Fourth Sitting—October 8th, 1852, 9 o'clock, A. M.*

President in the Chair.

The minutes of last meeting were read and approved.

The business Committee proposed the following addition to the fourth section of the Constitution, which was read.

“Section IV. article 3d. Immediately after the temporary organi-

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minutes of the proceedings of the Association. He shall keep a roll book of the members, and see that it is corrected annually, and he shall furnish to the Executive Committee a correct transcript of the minutes of the meetings for publication in the Transactions of the Association.

ARTICLE IV. The Corresponding Secretary shall attend to the official correspondence directed by the association with other bodies, or with its members, all of which correspondence shall be approved by the President.

ARTICLE V. The Treasurer shall receive and take care of the funds of the association; shall pay its money only on the order of the Executive Committee, countersigned by the President; and shall present a statement of his accounts annually, that they may be audited.

ARTICLE VI. The Executive Committee shall take charge of the publication of the proceedings of the Association, including such papers on scientific subjects as it may direct to be published; attend to their distribution; pay the expenses incurred on behalf of the Association at its meetings or in the interim, and report a statement of their transactions to the next meeting.

#### SECTION IV. *Of the Meetings.*

ARTICLE I. The meetings shall be held annually, at such time and place as shall be determined at the adjournment of the previous meeting, observing that no two meetings shall be held consecutively at the same place.

ARTICLE II. The meetings shall be organized by the President of the previous year, or, in his absence, by either of the Vice Presidents in the order of their election, or, in their absence, by the Recording Secretary, who shall act *pro tempore* until the nomination and election of officers for the session.

ARTICLE III. Immediately after the temporary organization of the Association the roll shall be called, when a committee on credentials shall be appointed from the *members* present, to whom the certificates of delegates



zation of the Association, the roll shall be called, when a committee on credentials shall be appointed from the members present, to whom the certificates of delegates shall be submitted, and who shall examine the claims of all other applicants for membership before they are submitted to the Association."

It was adopted—

They also proposed the following addition to Section 2d.

"Every local pharmaceutical association shall be entitled to send five delegates."

After some discussion as to the propriety of limiting the number shall be submitted, and who shall examine the claims of all other applicants for membership before they are submitted to the Association.

#### SECTION V.

This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.

#### CODE OF ETHICS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The American Pharmaceutical Association, composed of Pharmacutists and Druggists throughout the United States, feeling a strong interest in the success and advancement of their profession in its practical and scientific relations, and also impressed with the belief that no amount of knowledge and skill will protect themselves and the public from the ill effects of an undue competition, and the temptations to gain at the expense of quality, unless they are upheld by high moral obligations in the path of duty, have subscribed to the following *Code of Ethics* for the government of their professional conduct.

ART. I. As the practice of pharmacy can only become uniform by an open and candid intercourse being kept up between apothecaries and druggists among themselves and each other, by the adoption of the National Pharmacopœia as a guide in the preparation of officinal medicines, by the discontinuance of secret formulæ and the practices arising from a quackish spirit, and by an encouragement of that *esprit du corps* which will prevent a resort to those disreputable practices arising out of an injurious and wicked competition;—*Therefore*, the members of this Association agree to uphold the use of the Pharmacopœia in their practice; to cultivate brotherly feeling among the members, and to discountenance quackery and dishonorable competition in their business.

ART. II. As labor should have its just reward, and as the skill knowledge and responsibility required in the practice of pharmacy are great,

at all, or if so, of making it in the ratio of the number of members, it was adopted as proposed.

The preamble of the Constitution was then taken up and after a mere verbal alteration was adopted and the Constitution thus completed.

Mr. Edward Parrish of Philadelphia offered the following resolution and queries which were read, and, after some verbal amendment, were adopted, viz :

“Resolved that the Executive Committee be requested to obtain, through the several Colleges of Pharmacy and Pharmaceu-

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the remuneration of the pharmacist's services should be proportioned to these, rather than to the market value of the preparations vended. The rate of charges will necessarily vary with geographical position, municipal location, and other circumstances of a permanent character, but a resort to intentional and unnecessary reduction in the rate of charges among apothecaries, with a view to gaining at the expense of their brethren, is strongly discountenanced by this Association as productive of evil results.

ART. III. The first duty of the apothecary, after duly preparing himself for his profession, being to procure good drugs and preparations, (for without these his skill and knowledge are of small avail,) he frequently has to rely on the good faith of the druggist for their selection. Those druggists whose knowledge, skill and integrity enable them to conduct their business faithfully, should be encouraged, rather than those who base their claims of patronage on the cheapness of their articles solely. When accidentally or otherwise, a deteriorated, or adulterated drug or medicine is sent to the apothecary, he should invariably return it to the druggist, with a statement of its defects. What is too frequently considered as a mere error of trade on the part of the druggist, becomes a *highly culpable* act when countenanced by the apothecary; hence, when repetitions of such frauds occur, they should be exposed for the benefit of the profession. A careful but firm pursuit of this course would render well-disposed druggists more careful, and deter the fraudulently inclined from a resort to their disreputable practices.

ART. IV. As the practice of pharmacy is quite distinct from the practice of medicine, and has been found to flourish in proportion as its practitioners have confined their attention to its requirements; and as the conduction of the business of both professions by the same individual involves pecuniary temptations which are often not compatible with a conscientious discharge of duty; we consider that the members of this Association should discountenance all such professional amalgamation; and in

tical associations, previous to our next annual meeting, answers to the following questions as far as expedient.

"1st, How many Apothecaries and Druggists are there in each of the principal Cities and towns of the United States?

"2d, What organizations exist in the several States, and what is the number of their members as compared with the number of druggists and apothecaries in the localities which they include?

"3d, How far is the business of dispensing medicines separated from the office of prescribing?

"4th, Have you any information in regard to the practice of our art, and the professional character of its practitioners, in dif-

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conducting business at the counter, should avoid prescribing for diseases when practicable, referring applicants for medical advice to the physician. We hold it as unprofessional and highly reprehensible for apothecaries to allow any per centage or commission to physicians on their prescriptions, as unjust to the public, and hurtful to the independence and self-respect of both the parties concerned. We also consider that the practice of some physicians, (in places where good apothecaries are numerous) of obtaining medicines at low prices from the latter, and selling them to their patients, is not only unjust and unprofessional, but deserving the censure of all high-minded medical men.

ART. V. The important influence exerted on the practice of pharmacy by the large proportion of physicians who have resigned its duties and emoluments to the apothecary, are reasons why he should seek their favorable opinion and cultivate their friendship, by earnest endeavors to furnish their patients with pure and well-prepared medicines. As physicians are liable to commit errors in writing their prescriptions, involving serious consequence to health and reputation if permitted to leave the shop, the apothecary should always, when he deems an error has been made, consult the physician before proceeding; yet in the delay which must necessarily occur, it his duty, when possible, to accomplish the interview without compromising the reputation of the physician. On the other hand, when apothecaries commit errors involving ill consequences, the physician, knowing the constant liability to error, should feel bound to screen them from undue censure, unless the result of a culpable negligence.

ART. VI. As we owe a debt of gratitude to our predecessors for the researches and observations which have so far advanced our scientific art, we hold that every apothecary and druggist is bound to contribute his mite towards the same fund, by noting the new ideas and phenomena which may occur in the course of his business, and publishing them, when of sufficient consequence, for the benefit of the profession.



ferent localities, likely to be of advantage to the Association in promoting the objects it has in view ?

"5th, Are there any State laws for the protection of the interests of the profession of Pharmacy, for the suppressing of Emphyricism, or in reference to the sale of poisons?"

Mr. C. A. Smith, of Cincinnati, offered the following resolution, which was read and adopted.

"Resolved, that the thanks of the Convention be presented to the President and Secretary, for the able manner in which they have performed the duties of their offices, and also to the Philadelphia College of Pharmacy, for the hospitality extended towards us."

On motion of Mr. Parrish it was voted, that the officers of this Convention, not specially elected under the Constitution, be considered the officers of the American Pharmaceutical Association until the election at the meeting of next year—when the Convention finally adjourned.

GEORGE D. COGGESHALL,  
*Recording Secretary.*

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### ON THE SPONTANEOUS DECOMPOSITION OF PYROXYLIN, (GUN COTTON.)

To the Editor of the American Journal of Pharmacy :

About six months ago, I prepared a quantity of gun-cotton, according to the formula of the U. S. Pharmacopœia; and put it into a wide-mouthed bottle, which was furnished with an accurate stopper.

Having had occasion to examine it the other day, I found the upper portion of the bottle completely filled with nitrous acid gas, and the lower portion of the cork changed into *Suberic acid*.

After exposing it for sometime to the air, and allowing the nitrous acid to escape, I tried to dissolve a little of it in a mixture of ether and alcohol, but found it totally insoluble: another portion I ignited, but found it to be entirely divested of its explosive properties.

It will be evident from this, that in order to make good Colloidion, the gun-cotton must be recently prepared; and in no case ought it to be kept in a bottle furnished with a cork stopper: and

from the disposition which it shows for undergoing spontaneous decomposition, great care ought to be exercised whenever this article is intended to keep for any length of time. Wrapping it in paper, for instance, and laying it along side of other parcels, would in my opinion be incurring the risk of great mischief and danger, from the liberation of the free nitrous acid gas.

JAMES BEATSON, *Apothecary,*  
U. S. Naval Hospital.

*United States Naval Hospital, New York Station, Sept. 1851.*

NOTE BY THE EDITOR.—We have also noticed the decomposition of gun-cotton prepared by Mialhe's process, that now found in the U. S. Pharmacopœia. Last winter a parcel of gun-cotton was, after drying, put in a wide-mouthed vial and covered with paper instead of a cork. On recently examining it, the cotton had undergone a complete change, the odor of nitrous acid was quite apparent in the vial, and the texture of the paper cover was destroyed. When pressed in the fingers its apparently fibrous structure was lost, and a gummy mass, exceedingly adhesive, remained, which was not soluble in ether. As several writers have noticed the same, or analogous changes, and some light has been thrown on its cause by Mr. Gladstone, we will make a few statements from papers in the *Pharmaceutical Journal*.

The first notice is by Mr. Tustin, (vol. IX. 405.) He had prepared gun-cotton for collodion, by Mialhe's process, and put it away in a corked bottle for several months in a dark closet, having opened it from time to time to remove portions, when, on the last occasion, he found the bottle full of reddish-brown vapours, and that the cotton had lost its explosibility, had a strong acid taste, and contained evidences of nitric and sulphuric acids, though neutral when put away. Common cotton is a powerful depolarizer, whilst gun-cotton does not depolarize light. Dr. Pereira, to whom this gun-cotton was shown, writes:—"Your decomposing gun-cotton agrees with common cotton, though its depolarizing properties are somewhat weaker; either, therefore, the cotton was not originally properly prepared, or it has resumed its former optical characters, and simultaneously has given out an oxide of nitrogen (either  $\text{NO}_2$  or  $\text{NO}_4$  )."

Mr. Tustin here leaves the inquiry, after stating that the gun-cotton was still soluble in ether.

Mr. Jacob Bell (ibid. 406) had known a similar decomposition, during which a tin foil cover to the bottle was destroyed by the acid fumes.

Mr. J. H. Gladstone has examined into the changes which gun-cotton and analogous substances undergo, more critically (ibid. vol. XI. page 401,) and we extract the following:

"Gun-cotton, as ordinarily produced, especially for the preparation of col-

iodion, is a mixture of two distinct, though analogous substances. One is designated pyroxyline, and has the formula  $C_{24} \left\{ \begin{smallmatrix} H_{15} \\ 5 NO_4 \end{smallmatrix} \right\} O_{20}$  assigned to it in my paper, (Mem. Chem. Society, iii. p. 412;) it leaves no residuum on explosion, and is insoluble in ether. The other received the appellation cotton-xyloidine, and the formula  $C_{24} \left\{ \begin{smallmatrix} H_{17} \\ 3 NO_4 \end{smallmatrix} \right\} O_{20}$ ; it leaves a residue on explosion, is soluble in ether, &c. The remark of Mr. Tustin, that his decomposing gun-cotton was soluble in ether, proves that it was, partly at least, this latter compound, and not the more explosive one. I shall speak of each of these descriptions of gun-cotton separately.

*Pyroxyline*.—This substance is produced only when cotton or cotton-xyloidine, is immersed in a mixture of nitric acid, sp. gr. 1.5 with strong oil of vitriol. Although it contains so large an amount of oxide of nitrogen, I am acquainted with no clear instance in which it has undergone spontaneous decomposition. Specimens obtained by the action of the mixed acids on cotton-xyloidine, have shown no indications of change; and, pyroxyline obtained in a compact translucent form from solution in acetic ether, has also remained unaltered.

*Cotton-Xyloidine*.—This may be prepared in a state of purity, and in a pulverulent condition, by dissolving cotton or pyroxylin in nitric acid of about sp. gr. 1.45, and precipitating the substance by water.

Several specimens of this compound, made from both sources, have hitherto suffered no decomposition, but they have been generally kept in the dark. One sample of precipitated cotton-xyloidine placed in a stoppered bottle remained in a cupboard, the door of which was sometimes open, sometimes closed. After a lapse of about three years it suddenly began to evolve nitric oxide and water. The action continued for a few weeks and then nothing remained but a small quantity of a transparent gummy mass of a light brown color, and possessed of a very peculiar odor. Several months produced no further alteration. This product of decomposition which had about the tenacity and consistency of ordinary gum, was not explosive: when heated in a close tube *per se* it evolved red fumes, and afterwards swelled up, being carbonized and evolving empyreumatic oils. It was found to be insoluble in cold water; but when boiled in that liquid it swelled up as a gelatinous mass, and became disintegrated."

After detailing experiments with a variety of starchy and gummy substances, Mr. Gladstone remarks, that the *rationale* of the decompositions has not been clearly elucidated. "The only general conclusion which can be drawn appears to be, that several substances of the character above described, have a tendency to suffer spontaneous decomposition from being oxidized into non-azotized acids at the expense of the peroxide of nitrogen  $NO_4$  they contain, which is reduced to the condition of nitric oxide  $NO_2$  and evolved as such, a portion of water being always given off at the same time."

We have frequently noticed that the solubility of gun-cotton in ether is influenced by the length of time the cotton is acted on by the acid mixture, and that when three and a half or four minutes elapse, the change has been sufficiently completed. When not sufficiently changed, cotton assumes, in contact with ether, a consistence like gum tragacanth mucilage, or starch jelly.

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RESOLUTIONS, ETC., ADOPTED AT A MEETING OF THE BOARD OF TRUSTEES OF THE MASSACHUSETTS COLLEGE OF PHARMACY, NOV. 15, 1852.

*Resolved, 1st.*—That we heartily approve of the proceedings of the National Pharmaceutical Convention, held in Philadelphia, October, 1852, and recognize in its doings, the spirit that should actuate the pharmacutists of this wide-spread Republic.

*Resolved, 2d.*—That we approve of the objects and designs of the American Pharmaceutical Association, and will lend our aid and influence in promoting its objects, and for extending the usefulness of the Association.

*Resolved, 3d.*—That we adopt the Code of Ethics of the American Pharmaceutical Association, passed by that body, A. D. 1852, as the Ethics of the Massachusetts College of Pharmacy.

*Voted.*—That a committee of six be appointed to collect statistical information of the state of Pharmacy in New England, for the use of this College, and to act upon the resolutions and queries offered by Mr. Edward Parrish, of Philadelphia, in the National Pharmaceutical Convention; and that Samuel M. Colcord, Ashel Boyden, Thomas Restieaux, William A. Brewer, Samuel R. Philbrick, and Henry D. Fowle, constitute said committee.

*Voted.*—That the Committee have power to fill any vacancies that may occur in their number.

*Voted.*—That a copy of these resolutions, &c., be forwarded to the Secretary of the American Pharmaceutical Association.

A true copy.

Attest,      HENRY W. LINCOLN,  
Secretary.

[*Note.* We publish the above exhibit of the action of the Trustees of the Massachusetts College of Pharmacy, with the consent of the President and officers of the Board, subject to their approval at the annual meeting not yet held.—EDITOR.]



## ON FLUID EXTRACT OF RHUBARB AND SENNA.

BY WILLIAM PROCTER, JR.

Notwithstanding that two preparations of Rhubarb and Senna are already known, it is believed that the new one, now proposed, possesses sufficient claims to gain for it the favorable opinion of physicians and patients in many cases where a cathartic is needed, simply as such, or in connection with other medicines. It is well known, that senna has little, if any, tonic influence on the alimentary surfaces; that an overdose has a depleting effect, often inconvenient, and that griping is a frequent attendant on its exhibition. On the other hand, it is equally understood, that rhubarb is remarkable for being a sort of therapeutical paradox, in so far as it possesses both a purgative and an astringent property, the latter coming into play *after* the former has manifested itself, and thus repairing, as it were, its effects. It is also well known, that this astringent or tonic action is so strongly marked, that it is necessary in most cases to combine it with some other cathartic to overcome or modify this peculiarity when a simple cathartic is needed. By the union of these two drugs in the concentrated form presented by a fluid extract, and in a due proportion, a resulting cathartic action is obtained which is safe, unattended by unpleasant symptoms, and not followed by constipation when the dose has been properly graduated. It has been ascertained that the association of alkalies and alkaline salts with rhubarb and senna, has a tendency to prevent their unpleasant griping effects, and in the case of senna, to increase its activity. The introduction of the bicarbonate of potassa is with this view, and the aromatics from their carminative properties also aid. The following is the formula:—

Take of Senna, in coarse powder,      twelve ounces, (troy)

Rhubarb, in coarse powder,      four ounces,

Bicarbonate of potassa,      half an ounce,

Sugar,      eight ounces,

Tincture of ginger,      a fluid ounce,

Oil of cloves,      eight minims,

Oil of aniseed,      sixteen minims,

Water and alcohol, of each a sufficient quantity.

Mix the senna and rhubarb (by grinding them together in a convenient way,) pour upon them two pints of diluted alcohol

(U. S. P.), allow them to macerate twenty-four hours, and introduce the mixture into a percolator furnished below with a stop-cock or cork to regulate the flow. A mixture of one part of alcohol and three of water should now be poured on above, so as to keep a constant but slow displacement of the absorbed menstruum, until one gallon of tincture has passed. Evaporate this in a water bath to eleven fluid ounces, dissolve in it the sugar and bicarbonate, and after straining, add the tincture of ginger, holding the oils in solution and mix. When done the whole should measure a pint.

*Remarks.* If the percolation has been properly conducted, the ingredients will have been sufficiently exhausted when six pints of fluid have passed. As by far the larger portion of the soluble matter passes in the first two pints, it is well to set these aside and evaporate them separately to six fluid ounces, subsequently adding it to the other liquid when it has been reduced to five fluid ounces. As the cathartic principles of senna and rhubarb are very susceptible to injury from heat, especially in contact with the air, the propriety of using the best available means for conducting the evaporation need not be urged. When the evaporation is conducted in open vessels, some advantage is gained by adding the sugar to the tincture and continuing the process until it measures fifteen fluid ounces. The sugar protects the extractive matter from oxidation and more completely suspends or dissolves the resinous part of the rhubarb contained in the tincture. The bicarbonate should not be added to the extract while it is above 140° Fahr. and should be reduced to powder previously.

It may be objected to this formula that we already have fluid extracts of rhubarb and of senna of the same ratio of strength, and that when physicians need such an association, they can mix them. In answer, it may be stated that the cases where a simple cathartic is needed, are so numerous that this preparation will be found useful to the physician, and a good medicine for travellers and others who resort to this kind of purgative habitually.

## ON TANNATE OF ALUMINA.

BY WILLIAM PROCTER, JR.

The London Medical Gazette contains an article on the medical application of Tannate of Alumina, in which it is stated that Mr. Rogers Harrison had prepared a combination of alumina and tannic acid which "was of a dirty yellowish color, and in crystals about the size of those of coarse sugar, and readily soluble in hot water." It had been used successfully for inflammation of the urethral passages in the form of injection, two to ten grains of the salt, according to circumstances, dissolved in sufficient distilled water.

Having recently received a prescription for ten grains of this salt dissolved in two fluid ounces of water, and being unable in any of a number of chemical works at my command, to find any account of the salt, I undertook to make it, but could not succeed in obtaining a soluble compound of tannic acid and alumina that answered to the description of that of Mr. Harrison, all of them being insoluble or nearly so in water, and entirely amorphous.

1st. An equivalent of tannic acid was triturated with one of alumina in the pulpy hydrated condition; combination ensued, and an insoluble or slightly soluble compound resulted. The same result occurred when two and three equivalents of alumina were employed. When agitated with water after standing in a pulpy state for several weeks, and the water filtered off, the latter gave no evidence of tannic acid or a soluble tannate.

2d. A solution of alum in water was prepared, containing 37 grains to the fluid ounce, which quantity contains four grains of anhydrous alumina. A solution of tannic acid in water was then made, containing 16 grains to the fluid ounce. The alumina and tannic acid existed nearly in the proportion of their equivalents in these solutions.

Equal measures were mixed together without any precipitation, showing that free tannic acid is unable to displace alumina from its combination with sulphuric acid, notwithstanding the insolubility of the aluminous tannate, even when they are boiled.

3d. When, however, ammonia is carefully added to a fluid



ounce of the tannic acid solution until it is saturated, and an equal measure of the solution of alum is added, an immediate bulky gelatinous precipitate occurs, similar in appearance to the magma in No. 1. When washed and dried it weighed 13 grains. The washings had a slight astringent taste, and afforded a slight inky blue precipitate with ter-chloride of iron.

4th. As tannic acid is considered by Liebig to be tribasic, three parts of solution of alum was added to one of solution of tannic acid, with sufficient excess of ammonia to liberate all the alumina. On filtering out the precipitate, the clear liquid yielded no precipitate with ammonia, but was precipitated blueish black by ter-chloride of iron; showing that in the presence of enough alumina to form a tribasic salt, a part of the tannic acid remains in solution probably as tannate of ammonia.

5th. The liquid filtered from No. 3, with the washings, was evaporated to a small bulk, and on standing, dirty yellowish colored crystals in small quantity were deposited. The mother liquid poured off and evaporated gave other mamillary crystals admixed with dark matter. The first crystals had the well known triangular facets of alum, and when tested by solution in hot water, yielded a blueish-black precipitate with ter-chloride of iron. When powdered and boiled in repeated portions of alcohol, nearly all the color is removed, and they give but a trace of color with the ter-chloride, whilst the alcohol when evaporated yielded a yellowish, non-crystalline residue, which reacted as tannic acid with the ter-salts of iron, and was not precipitated by an excess of ammonia. The crystals, after treatment by alcohol, yielded, when dissolved in water, a white insoluble precipitate with chloride of barium, and a gelatinous precipitate with ammonia and were alum. The residue from the mother liquid contained sulphate of ammonia, tannin and some undecomposed alum.

From these results it appears that tannate of alumina formed by direct combination, is an amorphous salt, nearly insoluble in water. That the same salt is precipitated from alum on the addition of tannate of ammonia, and, finally, that it is probable that the tannate of alumina of Mr. Harrison is a mixture of tannic acid and alum, derived either from the evaporation of a mixture of alum and tannic acid; or, from the washings of tannate of alumina, as treated in No. 5.



## ON GLYCERIN OINTMENT.

To the Editor of the American Journal of Pharmacy :

*Dear Sir,*—I send you a formula for an ointment which I have found very useful for chapped hands, lips, excoriations of the skin, &c. &c. I have called it *Glycerin Ointment*.

R	Spermaceti,	℥ss.
	White wax,	℥j.
	Oil of almonds,	℥ij. (f.)
	Glycerin,	℥j. (f.)

Melt the wax and spermaceti with the oil of almonds at a moderate heat; put these into a wedgewood mortar, add the glycerin, and rub until well mixed and cold. I have used this ointment in my own family, and distributed much of it among my friends, and can testify to its value.

I am not aware that an ointment of which glycerin\* forms a part has been proposed, and yet few physicians are ignorant of its property of protecting and soothing inflamed surfaces of the skin and mucous membrane. To such, however, as are unacquainted with its valuable properties, I would refer them to the article on glycerin, in the last edition of Wood & Bache's Dispensatory.

Yours, truly, JOHN H. ECKY.

*Philadelphia, Nov. 25, 1852.*

## DESCRIPTION OF SOME PHARMACEUTICAL APPARATUS.

BY THE EDITOR.

The following described apparatus was exhibited at the Pharmaceutical Society's monthly meeting for May, and its ingenious construction has induced us to copy the plate and description from the Pharmaceutical Journal for June, 1852, as it may be of service to some of our readers.

*The Mackenzie Triturator.*—This apparatus is intended to perform the heavy pestle-and-mortar, and other mixing operations

\* [See vol. xxii., page 118, of this Journal, for a notice of glycerin ointment by Mr. Joseph Laidley. Some of our physicians in prescribing glycerin, forget that it is insoluble in fatty matter, and can only be incorporated with it mechanically, to effect which, it is necessary that the fat should have a soft consistence. We have had prescriptions for a certain measure of glycerin to be incorporated with a sufficient quantity of butter of cocoa to give it the consistence of an ointment, just as though it was a fixed oil. To properly unite so solid a fat as oil of cocoa with glycerin, it is necessary to previously soften it by combination with oil of sweet almonds.—EDITOR.]

involved in the manufacture of ointments and paints, and for the several processes of frictional mixing, with which the druggists' apprentice is, unfortunately for himself, too familiar. The abrading or triturating action is performed by a pestle with an ingeniously arranged differential motion, which we shall describe with the help of three illustrative figures :

FIG. 3.

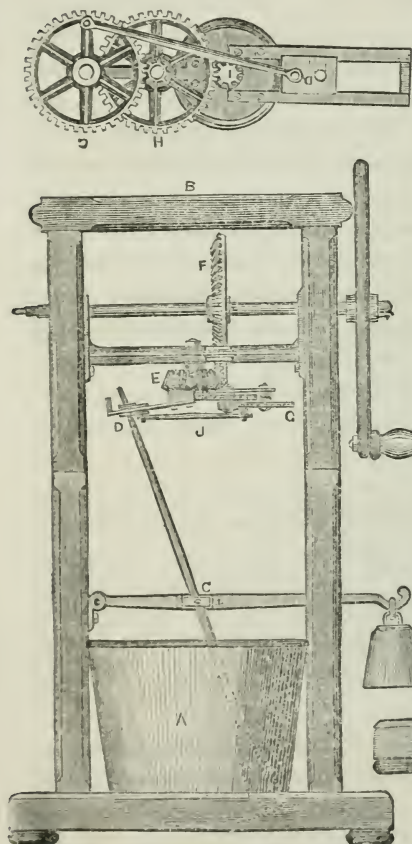


FIG. 1.

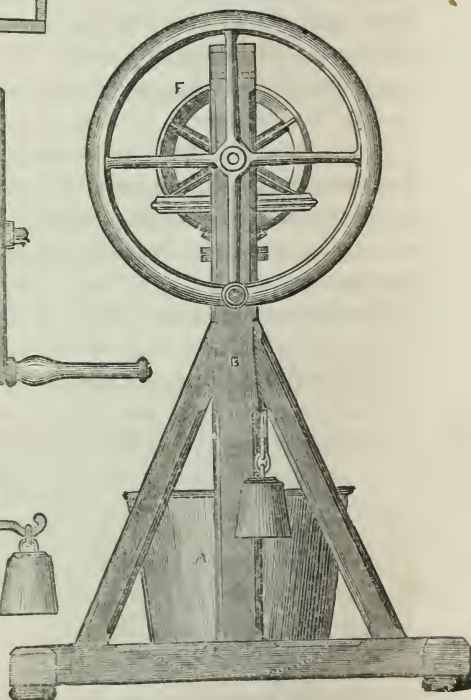


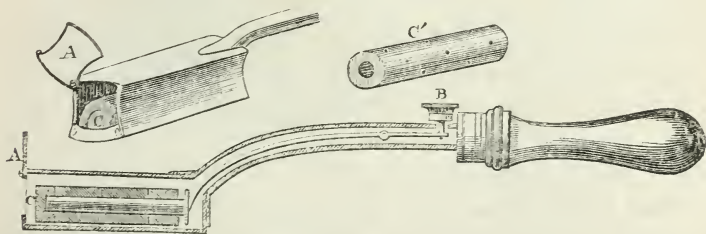
FIG. 2.

Figure 1 is a front elevation of the triturator, showing the pestle and actuating gearing. Figure 2 is a corresponding side elevation; and figure 3 is a detail for the gearing of the differential movement of the pestle. The mortar, A, is seated in the base of a timber frame, B, the upper part of which carries the driving

shaft and connections. The pestle has a long rod passed, at C, through a universal joint in a weighted lever, arranged to give the proper pressure to the pestle. The top of the pestle-rod is inserted into a small sliding block, D, grooved to slide along a short guide-bar, as shown in the detail, fig. 3. This bar is fixed to the side of the bevel wheel, E, running loose on a vertical stud, and driven by the large wheel, F, fast on the driving shaft, which receives its motion from a winch-handle. A spur-wheel, G, runs on a stud carried by an arm, attached to the wheel, E, and gears with a pinion on the shaft of the spur-wheel, H, which latter gears with a stationary pinion, I, fast on the stud centre of the bevel wheel, E. A rod, L, connects the block, D, to a pin in the face of the wheel, G, and thus the revolution of this wheel causes the rod of the pestle to be continually traversed backwards and forwards across the centre line of the wheel, F, directly over the mortar beneath. This gearing involves the principle of the old "sun-and-planet" motion, and gives to the pestle a most effective rubbing action in a compound revolving and traversing movement.

The original idea in contriving this triturator, was to provide some more effectual plan for grinding sheep ointment, but its success has led to its extended use for all triturating purposes and levigating operations. Small machines are also manufactured with movable wedgewood mortars and pestles, scraper and light iron framing of various sizes, suitable for druggists, &c.

*Patent Heat-Regulating Plaster Spatula.*—This instrument, invented by Mr. Stockton, of 3 Gray's place, Brompton, (Eng.) we find figured in the *Pharmaceutical Journal* for November.



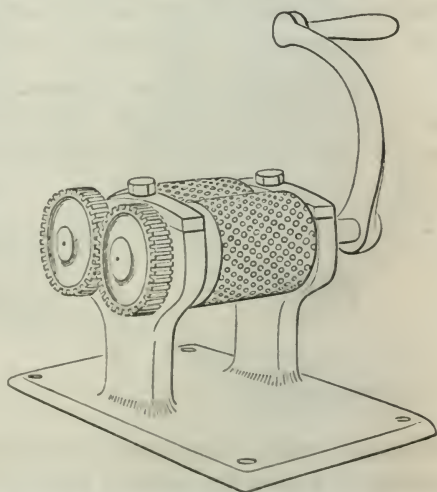
Although rather complicated, it presents several advantages worthy of notice, the chief of which is the perfect control the operator has over the heat. The following description we copy :



The blade is a hollow case into which the heater is inserted, having a door (A) at one end, and being connected at the other by a hollow tube, with the handle. The heater (C) is supported on a lever, which passes through the hollow tube and terminates in a thumb-button (B). By depressing this button the heater is raised so as not to be in contact with the lower part of the spatula. On removing the thumb when more heat is required, the heater is depressed, and produces the desired effect. The heater, which consists of a hollow tube of thick copper, slides on a pin which forms the termination of the lever, and which regulates its position in the box. Some heaters are perforated, to admit of their being easily heated by means of gas.

The chief advantage of this Spatula consists in the facility with which the heat may be regulated by means of the lever and button, which latter is quite under the control of the thumb. The box containing the heater is composed of brass, and not being inserted in the fire, is less troublesome to keep clean than the common spatula. When several plasters are required, the heater may be removed and another inserted with facility, without loss of time.

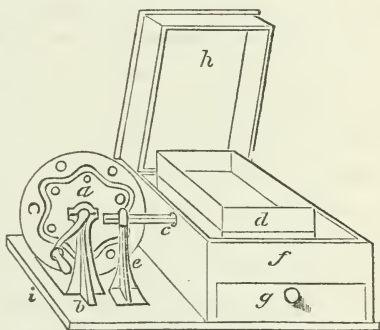
*Rotary Pill Machine.*—In our last number we described the apparatus of Messrs. POND and MORSE, of Rutland, Vermont, without giving the names of the inventors, an omission entirely accidental, and which we now make up by this additional notice. The difficulty of disengaging the pills from the spherical cavities appears to be the only objection urged against this machine. We have been informed that an arrangement for effecting this purpose has been tried, with but partial success. It consisted of two bands of thin gum elastic passing



over each cylinder and around another cylinder running parallel, supported on a pinion attached to an arm extended on either side from the main support. The mass was fed in between the bands, which, from their elasticity, took the shape of the matrices when pressed on by the pill-mass, and after passing the point of contact, the bands, by contracting, forced out the pills. The objection to this arrangement appears to be, that the bands after use for a time, are cut by the sharp edges of the moulds and become useless.

*Harris's Patent Sieve.*—

By a singular misunderstanding, the invention of the Patent Sieve figured in the margin, and which was described in our last number, was ascribed to Mr. Swift, the inventor of the drug-mill bearing his name. This instrument is the invention of Mr. Saml. Harris of Springfield, Mass., who has made Charles Ellis & Co. his agent for Philadelphia.



PHARMACEUTICAL NOTICES.

By X. LANDERER.

*Cantharides.*—The true *Lytta vesicatoria* is unknown both in Greece and in the oriental countries. The *Mylabris cichorii* and *M. variegata* are generally substituted. These genera are readily distinguished from cantharides by their color and general appearance. They are tolerably abundant throughout the entire East. Landerer observed them in Smyrna and in Constantinople, in the month of August. In Greece they are seen more especially during May and June. They are the Greek *chrysomyga*, and are used for vesicating purposes by being made into a plaster or cataplasm, with honey or bread. This, after a few hours, produces considerable irritation and redness, followed by vesication.



Landerer has prepared a cerate from the fresh-dried *Mylabris*, the action of which, although similar, is less powerful than that of *cantharides*. It is used with advantage to accelerate suppuration, and also as an irritant.

*Conium*.—Among the inhabitants of the Ionian islands, *conium* is used as a remedy for asthma. Coarse blotting paper is moistened with a dilute solution of salt-petre, and used as an envelope for the leaves, which are formed into cigars. The effect is said to be extraordinary.

*Anthelmintics*.—In Greece, strong decoctions of garlic and rue are used for worms. These remedies, in the large doses in which they are administered, frequently produce violent effects. It often happens that children who have been incautiously dosed with a strong decoction of garlic, to which another of rue has been added, exhibit every sign of narcotic poisoning. They become giddy, and fall into a soporous state which lasts for many hours, frequently passing into a deep, though restless sleep, accompanied with delirium. In other cases vomiting supervenes; not unfrequently worms are evacuated in this way. There is also diarrhoea, worms being mingled with the dejections. A dullness of the head, and nausea, together with want of appetite and flatulence, frequently remain many days.—*Central Blat.*, No. 33.—July 1852.

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## ON THE TRANSFORMATION OF MANNITE INTO SUGAR.

BY M. L'HERMITE.

The existence of a slight excess of hydrogen in relation to the oxygen, constitutes the essential difference in the elementary composition of mannite as compared with sugar. On considering the affinities which connect these vegetable principles, we might expect, under certain conditions, to find one of them transformed into the other. This transformation does not appear to have been hitherto studied.

Fresh and perfectly pure manna does not undergo alcoholic fermentation, but after a lapse of some time it is liable to a peculiar alteration. It changes from a white opaque, dry, and almost friable substance, to that of a reddish, translucent, and gluey

one. It is then sufficiently hygrometric to dissolve in the water which it derives from the atmosphere; and this solution, with the addition of yeast, soon becomes converted into alcohol and carbonic acid.

The preceding explains the reason why sugar is found in manna. If, under an oxydizing influence, mannite is convertible into sugar, there can be no doubt that it may also be produced by the action of deoxidizing agents on the sugar itself; it is thus that it is formed in the juice of beet-root submitted to viscous fermentation.—*Comptes Rendus, and Pharm. Jour.*

## PREPARATION OF MARKING INKS FOR LINEN.

By JULES GUILLER.

The author, who has received five years' exclusive privilege in Paris for the manufacture of marking inks, for the processes which he has invented for making them, states that none of the marking inks used heretofore completely answer the purpose intended. Some produce a yellowish stain on linen; and others, although marking black in the first instance, become gradually washed out. To remedy these evils, and to avoid the use of two fluids in marking linen, he has devised three processes for making marking ink, which are as follows:—

### *Formula No. 1.*

Nitrate of silver	.	.	.	.	11 parts.
Distilled water	.	.	.	.	85 “
Powdered gum arabic	.	.	.	.	20 “
Carbonate of soda	.	.	.	.	22 “
Liquor of ammonia	.	.	.	.	30 “

The twenty-two parts of carbonate of soda are to be dissolved in the eighty-five parts of distilled water; and this solution rubbed with the gum in a mortar until it is dissolved. The eleven parts of nitrate of silver are to be dissolved in the twenty parts of liquor of ammonia, and then mixed with the soda solution. The mixed fluids are then to be warmed in a flask, by which they become at first greyish black, and partly coagulated; afterwards brown, and then clear; and lastly, when the ink boils, very dark,

and of such a consistence that it will flow readily from a pen. This ink, and the one prepared according to the second formula, form no precipitates, and thicken by boiling, whereby their colors become darker, and their ammoniacal odor weaker.

*Formula No. 2.*

Nitrate of silver	.	.	.	.	5 parts.
Distilled water	.	.	.	.	12 "
Powdered gum arabic	.	.	.	.	5 "
Carbonate of soda	.	.	.	.	7 "
Liquor of ammonia	.	.	.	.	10 "

These ingredients are to be treated in the manner above described, and the resulting mixture heated in a flask until it has become of a very dark color, which is generally the case when its volume has diminished, about five per cent. by evaporation. By continuing the evaporation too long, a precipitate is produced, in consequence of the loss of ammonia.

The ink prepared in this manner is distinguished by producing very black characters on linen, and is very suitable for marking with stamps.

*Formula No. 3.*

Nitrate of silver	.	.	.	.	17 parts.
Distilled water	.	.	.	.	85 "
Powdered gum arabic	.	.	.	.	20 "
Carbonate of soda	.	.	.	.	22 "
Liquor of ammonia	.	.	.	.	42 "
Sulphate of copper	.	.	.	.	33 "

The twenty-two parts of carbonate of soda are to be dissolved in twenty-five parts of distilled water, and the seventeen parts of nitrate of silver in the forty-two parts of ammonia. The twenty parts of gum are to be dissolved in the remaining sixty parts of water, and mixed with the soda solution, and afterwards with the silver solution. At last, the thirty-three parts of sulphate of copper are to be added.

The large quantity of ammonia in this formula is explained by the presence of the copper salt. The sulphate of copper could be replaced by nitrate of silver; but to do so, requires a much larger quantity of nitrate of silver, to render the ink as

dark as it is with the copper salt. This compound differs from the others, inasmuch as it has a blue, whilst they have a dark brown color.

The proportions of the ingredients in these formulæ can be altered according to the thickness of the ink required, or according to the use to which it is to be applied, or according to the material which is to be marked.—*Annals of Pharmacy*, July, 1852—from *Journal de Pharmacie*.

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### ON THE BOUQUET OF WINE.

By DR. F. L. WINCKLER.

In his recent experiments on the vegetation of plants, Winckler has arrived at very satisfactory results explanatory of the specific odor peculiar to the various sorts of wine produced in different districts, which is known by the expression of "*blume*," or "*bouquet*."

If about half a pint of any sort of grape wine be evaporated in a porcelain vessel by means of steam, until not only all the spirit of wine, but also the œnanthic ether, and, in general, all parts volatile at this temperature (80° R.) are evaporated, a thickish liquid of more or less dark color, and of a peculiar, pleasant, acidulo-vinous odor remains behind, from which, after it has become cold, a greater or lesser quantity of tartar separates. By diluting this liquid with water, so that the weight of the solution is about a quarter of a pound, and subjecting the solution, with an equal weight of fresh burnt lime, to distillation, there is obtained, even during the slacking or hydrating of the lime a very agreeable and intensely smelling distillate, which, like ammonia, is a strong base, and forms with acids neutral salts, possessing in a high degree the odor corresponding to the so-called "*bouquet*" of the employed wine.

This fact suggested the idea that this compound may be in a similar manner contained in the wine itself, and the supposition was fully corroborated by experiments.

If the residuary lime of the evaporated wine be treated with water after the conclusion of the distillation, the solution filtered, and the filtrate distilled with a small quantity of moderately



strong sulphuric acid, a new volatile acid of a highly specific, almost balsamic odor is obtained, which being neutralized by the necessary quantity of the first-obtained nitrogenous base, yields a neutral volatile salt, which possesses the peculiar odor ("bouquet") of the employed wine in the highest degree. There is, therefore, no doubt that this compound is not only contained as such in the wine, and constitutes the "bouquet," but that it is this nitrogenous compound which determines the chemical constitution, the durability, and all those changes to which it is subject by keeping.

Although for the present only six different sorts of red and white grape wine from various districts of the Grand Duchy have been examined, yet the results are so uniform and decisive, that there exists no reason to doubt their correctness. The contrast was very striking on comparing the "bouquets" of a fine red Oberingelheim wine, of 1846, with a very excellent sort of white Bergstraszer of 1846, and with one of the worst qualities of 1851, from the latter district. The first two sorts yielded quite a different bouquet, of a very pleasant odor, whilst the latter betrayed but too distinctly the year and quality by its unpleasant earthy smell.

Beer also contains a considerable proportion of nitrogen, which can be obtained from it in the same way as from the wine. It is this component from which beer obtains its importance as a nutrient.

The author has, moreover, found, that the coloring matter of wine, and chiefly that of red wine, is closely connected with this nitrogenous compound; that most, and perhaps all, fresh vegetable juices contain nitrogen, and undergo during the process of vegetation, changes which are analogous to the fermentation of wine; that the fragrantcy of the vine-flowers, and very likely also the odors of most flowers and leaves are dependent on similar compounds, which are characteristic, and of a peculiar chemical composition in each genus of plants.—*London Pharm. Journ.*, from *Jahrbuch f. pract. Pharmacie*, Bd. xxv., Hft. 1, p. 7.



ON VEGETABLE MUCILAGE, AND SUBSTANCES ALLIED  
THERETO.

BY DR. KÜTZING.

Having sliced off with the razor a very thin piece of the white, broad sort of tragacanth, and placed it in a drop of water under the microscope, it swelled up instantaneously, and showed a distinctly cellular structure, and much larger starch-grains than usual. The cells consisted of a very thick membrane, and partly of several concentric layers. The starch grains were round and crowded in the cells, which were but loosely connected, and of various sizes, some of 1-10" diameter.

No reaction was produced on the thick cell-walls by tincture of iodine, but the starch grains became blue. On adding one drop of concentrated sulphuric acid, the cells swelled up still more, and the concentric layers became more distinctly visible, and at the same time, assumed a yellow or brownish-orange color. The inner cell-wall now appeared to be coated with a delicate blue membrane, which enclosed the starch-grains in the form of a sac. The starch-grains, by continued application of sulphuric acid, were converted into dextrine, and at last disappeared, as well as the blue membrane, but the thick cells still remained, though they lost the property of becoming orange or yellow by iodine; they remained at last entirely colorless by tincture of iodine, but upon the application of heat also dissolved.

These results induced the author to examine various other gums, and to watch the process of their formation in the plum-tree gum, which exudes from the trees belonging to *Drupacæ*, and, by the aid of iodine and sulphuric acid, he discovered that the cellulose of phanerogamic cells are colored blue, while that of all lichens and fungi which he examined, are colored orange or yellowish-brown by the application of sulphuric acid and iodine. All the kinds of natural gums of commerce present the same appearances, but with this difference, that those which contain more bassorine than arabine, present the iodine reaction with the aid of sulphuric acid for a longer time, whereas in gum arabic it disappears sooner. To the phanerogamia, which present a blue coloration, belong cotton, the cells of endive leaves, of cucumbers, and the wood of the *cruciferæ*.

It is, therefore, manifest that the denomination of cellulose has hitherto been applied, upon the authority of Payen, to two classes of substances, one of which is colored blue by iodine, the other brown. The blue color indicates the presence of starch, or rather of the substance out of which starch is formed, and the brownish-yellow color reminds us of inulin. We may, therefore, divide the mucilaginous and cellular substances into two groups, the one the amylon or starch-group, the other the inulin-group. That inulin is more allied to tragacanthin or bassorin and arabin than to starch, is shown by the fact, that, like arabin, it rotates to the left the plane of polarized light. In common with all the substances allied to starch, cellulose, and gum, it is changed into dextrin and sugar by the action of acids.

GROUP the first includes 1, *starch* ; 2, starch-cellulose.

GROUP the second includes, 1, *inulin* ; 2, inulin-cellulose or bassorin.

The author applies the name of *amyl* to the starchy, or amylaceous matter, in order to distinguish it from amyllum or starch. Its formula is  $C_{12} H_{10} O_{16}$ , and its reaction with tincture of iodine characterizes it. As, according to Mitscherlich, starch cellulose consists of  $C_{12} H_{10} O_{16}$ , the whole difference between *amyl* and starch-cellulose, denominated by the author, *gelin*, is, that the *amyl* substances are instantaneously colored blue by tincture of iodine, and the *gelin*-substances only upon the additional influence of sulphuric acid (or of alkalis.)

So also with regard to the second group: the inulin-globules are at once colored orange or brownish-yellow by iodine, whereas the bassorin substances become colored only upon the additional application of sulphuric acid. The lichen-cells in the cortical layer and in the fruit-parts of *Cetraria islandica* consist of true *amyl*.

In investigating the formation of gum, the author perceived, on breaking off the exudation from a plum, that not only the epidermis, but also the cells of the juicy parenchyma were at this spot in part already decomposed, and in part undergoing decomposition; the result of which is, that unlike those kinds of putrefactions, which are connected with the formation of certain fungi (*Fadenpilze*, *Strubpilze*, &c.) the organic product is a peculiar, hitherto unknown fungus, the *gum-fungus*, or the gum itself. The brown

color of these parts proceeds from the cell-walls, which are partly decomposed and converted into ulmin. The organic structure of the cherry and plum-tree gum, which the author proposes to call *crasinium*, is very distinct, as long as the gum is still in the fruit, or just about issuing from it, but forms a homogeneous mass as soon as it has exuded. On examining the cellular tissue of plums with iodine and sulphuric acid, it will be found, that the healthy part consists of gelin-cells, whilst the membranes of the affected portion have been converted into a bassorin-substance, which has partially become brown from the presence of ulmin. The walls of the latter portion are, moreover, very thick and loose, so that in those which are near dissolution, a peculiar system of very fine reticulated mucilage fibres can be seen upon close examination. These fibres disengage themselves gradually, but still running parallel to one another, and causing, by swelling, a pressure without; at last they are decomposed into very small molecules, which retain the original position of the fibres. These molecules are the beginning of a new cellular formation; they become larger and now contain one or two new cells, which again contain filial cells [*Tochterzellen*] and so on, until the cells become liquified and the mass exudes. The substance called by Guerin Varry *cerasin*, consists sometimes of such semi-liquified cells. The opinion of Mulder (*Physiol. Chemie*, p. 234,) that all kinds of gum are vegetable secretions and formed of dextrin, is, therefore, refuted, as well as the opinions of Nägeli and others, that a protein substance or nitrogenous "Protoplasma" must form the nucleus for cell formation, and that fungi are characterized by the want of starch.—*Archiv d. Pharmacie* 2 Rheihe, Bd. lxvii., Hft 1, 1851, p. 1. and *Pharm. Journal*, Jan. 1852.

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#### INJURIOUS EFFECTS OF CHEMICAL WORKS ON TIMBER AND GROWING CROPS.

At the Liverpool Assizes, on the 5th inst., the first of four separate actions came on for trial against Messrs. Muspratt & Co., proprietors of the chemical-works at Newton, near Liverpool, for alleged injury done to certain trees growing on the lands of the various plaintiffs, by the noxious gas or vapor proceeding from the defendants' works. A number of respectable agricul-



turists deposed that the estate formerly abounded in beautiful oak, elm, and ash timber; but since the erection of the chemical-works, the tops and shoots of the trees had been killed, the young grasses and crops were withered up whenever the wind blew the vapor from the chemical-works upon them; not a fruit-tree, quickset hedge, or flower-shrub could live; the timber began to decay; when trees were afterward felled, they were found to be in a bad state, and much of the timber that had been left standing had died away, until torn up by the wind from want of vigor. The ravages seemed to have extended to a distance of several miles from the works. Some of the witnesses had noticed the vapor descend, and, on such occasions, every metal article in the houses where it could obtain entrance, even if those articles were bright and polished just before, would become speedily covered with a dull, rusty coating. It appeared that the substances employed by Messrs. Muspratt were chiefly common salt and oil of vitriol, from which was evolved muriatic acid gas, which, combining with the atmosphere, and falling to the earth, destroyed both animal and vegetable life. A great number of experiments had been tried, with a view to remove the destructive effects of the vapor, but they were unsuccessful, and the defendants had to pay compensation to various parties from time to time, for the injury done to their crops; and among those parties were the present plaintiffs. The works having been given up, the question for the jury was as to the actual amount of damage which had been previously caused to the timber, fences and crops of the plaintiffs. Mr. Justice Cresswell thought as the works had been given up, it was a great pity to go on trying actions; and inquired whether there could not be some mode adopted of arranging matters, seeing that the defendants had not sought to set up any question of right. The suggestion of the learned judge, however, was not acceded to by the counsel on either side, and the examination of witnesses consequently proceeded. A compromise of all the actions was, however, finally arranged, the respective plaintiffs agreed to accept £500 pounds each, or a total of £2000, Messrs. Muspratt binding themselves to pull down the works.—*Bost. Med. and Surg. Journal, from Lancet.*

## ON CHLOROFORM.

BY WILLIAM HUSKISSON, JR.

A process appeared some time since, by Dr. Gregory, on the purification of chloroform by means of sulphuric acid; a short time after its publication, an article was added by Professor Christison, (*in the absence of Dr. Gregory,*) stating that chloroform, purified by sulphuric acid, had speedily undergone decomposition,—had become loaded with chlorine, and thus rendered quite unfit for use,—and that the manufacturer had failed, in almost every instance, in obtaining a permanent article. Since that period, no process for the preparation or the purification of chloroform has been published, except in the pharmacopœia; it has been left entirely to the discretion of the manufacturer. Recently, at a meeting of the Pharmaceutical Society, Dr. Pereira exhibited a specimen of chloroform, which had not only undergone change, but had become of a pink color.

Having prepared chloroform on a large scale, and having had considerable experience in the changes it undergoes when purified by sulphuric acid, the following is the only process by which I have always obtained a permanent article; and one which I have never found, under any circumstances, undergo change or decomposition. I take 130 lbs. of chloride of lime and 7 lbs. of common lime, put them into a capacious still, with sufficient water to make a thin paste; when well stirred together, I then add more water with 25 lbs. of rectified spirit; (*taking care that the still shall not be more than half full,*) lute it down; load it: apply a gentle heat and commence distillation; separate what comes over from the supernatant liquor, and wash it several times with distilled water; *put the washings and supernatant liquor again into the still, with one-half the above quantities, and proceed as before*; then introduce the chloroform thus obtained into an ordinary still, with four or five times its weight of distilled water, with a small quantity of lime; apply heat, and let the chloroform bubble through the water, and pass over; separate the chloroform from the water that comes over with it, by means of a separatory funnel, and agitate it with a little highly dried carbonate of potash, to entirely abstract from it a small portion of water it generally contains.



With regard to the product, there is considerable uncertainty, owing to the great difference in the quality of the chloride of lime employed; it is necessary that the chloride should be rendered alkaline by means of lime, otherwise formic acid is not so readily produced,—it also prevents, in a great measure, the action being so violent when the ingredients are mixed; and the chloroform that passes over is rarely contaminated with chlorine, which is frequently the case when the lime is omitted. I have occasionally added a weak solution of chlorine instead of water, and a larger quantity of lime: but neither by this, nor by any of the other processes I have tried, have I obtained a result so uniform or satisfactory, as by the foregoing. The chloroform, when thus carefully prepared, answers to the following tests: It is exceedingly bright and transparent in any moderate temperature, possessing a highly penetrating aromatic odor; when dropped upon the hand it rapidly evaporates, leaving no faint unpleasant odor behind. It is not affected by litmus or turmeric paper; when dropped into water the greater part immediately sinks, leaving a little floating on the surface, which, after a time, sinks also, imparting a sweetish taste to the water. It has a specific gravity of 1,500, which is the best test of its strength; when agitated with sulphuric acid, the acid becomes colored yellow, the chloroform loses its fine odor and undergoes decomposition, which takes place still more rapidly if allowed to remain in contact with the acid, giving off a gas somewhat resembling hydrochloric. If it contains the smallest amount of alcohol or spirits of wine, on the addition of a little bichromate of potash, and a few drops of sulphuric acid, the green oxide of chromium is formed, which floats on the surface, and, if allowed to evaporate spontaneously, the aldehyd which is formed thereby can be easily recognized. It is miscible with alcohol; if rather more than 13 parts of chloroform and 6 parts of alcohol, (-835 S. G.,) be mixed, they will unite and give a specific gravity of about 1,200, and if more chloroform be added, they will separate. When it contains the smallest amount of water, it will become clouded with every variation of temperature.

It is quite evident that the carbonizing or charring of the volatile oil by concentrated sulphuric acid, which is said to have caused nausea &c., in peculiar sensitive persons (*even when agi-*

tated with the purest sulphuric acid,) has caused decomposition of the chloroform as well as of the oil. It occurred to me, that the sulphuric acid converted the chloroform into formic acid by affording it sufficient oxygen, and the free chlorine combined with hydrogen, thus forming hydrochloric gas. When chloroform has been treated with sulphuric acid, it is usually agitated with oxide of manganese, which decomposes any free sulphurous acid that might be present.

Another remarkable phenomenon in decomposed chloroform, is the formation of a number of crystals round the upper surface of the chloroform, and after the lapse of a few weeks, its becoming a delicate pink color, which is sometimes fugitive, owing, no doubt, to a salt of manganese, most probably a sulphate; and this opinion is strengthened by the fact of its being observable in the following preparations:

When acetic acid is obtained by decomposing acetate of soda by sulphuric acid, the sulphurous acid that is formed passes over with the acetic acid; to remove this mineral acid, it was usual to add oxide of manganese; after a short time, the acetic acid that has been thus deprived of its sulphurous acid will frequently become pink, and deposit pink crystals; also in the preparation of chlorate of potash, if the heat applied to the mixture be too great, and the mixture boils over, the mother liquors will frequently be of a rich pink color. From these results I think we may safely infer, that it is a salt of manganese, like the mineral chameleon, which gives rise to the formation of crystals in, and to the changing color of chloroform, when subjected to Dr. Gregory's process.

I have tested and examined large quantities of Edinburgh and Dublin chloroform, but have never met with any to supersede, or even equal in its general characters, that prepared from the spirit obtained from the best London distillers; I regret that many scientific journals should have stated that the Edinburgh manufacturers have devoted more care and attention to its preparation, and have produced the best chloroform. The fact is, while the London manufacturers were using every effort to cover the actual expenses of materials, &c., to say nothing of profit, owing to the great difference in the duty on spirit or whiskey in England, and Scotland, and Ireland, (*chloroform is admitted free*

*of duty into England* ;) they, in the latter countries, manufactured at a profit, and we at a loss; and the result was, after repeated attempts, the London makers were compelled to give way to their Scotch friends, though not in quality but in price.—*Annals of Pharmacy, Jan. 1852.*

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### PREPARATION OF PURE METHYL-ALCOHOL.

By F. WOHLER.

It is known how very difficult it is to obtain pure methyl-alcohol from crude wood-spirit. The following method, founded upon the crystallizability of the oxalic methyl-ether, appears to be the most convenient for its preparation, at least in small quantities.

A quantity of crude wood-spirit is gradually mixed, so as to prevent over-heating, with an equal weight of concentrated sulphuric acid. The brown mixture is then submitted to distillation, in a tubulated retort, with two parts by weight of superoxalate of potash. It might be advisable to let the mass stand for twenty-four hours before distilling. A volatile and combustible fluid first passes over and is followed by oxalic ether, which begins to condense in the neck of the retort. The receiver is then removed, and the distillation continued, as long as any oxalic ether passes over, the disengagement of which is assisted by gently heating the tube. It is then pressed strongly between folds of blotting-paper and freed from any small quantity of adherent volatile products, either by placing it over sulphuric acid or by a protracted fusion. In this manner it may be immediately obtained quite colorless. The combustible fluid which first passes over contains some diluted oxalic ether, which may be crystallized by evaporation at a moderate heat. The rough wood-spirit employed by me in the experiment was so impure that, when mixed with water, it became milky, and it produced in this manner more than one-quarter of its weight of pure oxalic ether.

In order to prepare methyl-alcohol from oxalic ether it will be best to distil it with water only, which process, it is known, transforms it into oxalic acid and methyl-alcohol. In distilling it with dry hydrate of lime it will not be decomposed, and in distilling it with a concentrated lye of potash its decomposition is only partial, because then a methyl-potash salt is formed, which is most



difficult to dissolve, and which is now under closer examination.  
—*Phar. Jour. from Ann. d. Chem. und Pharm.*, Bd. lxxxi.

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#### ON THE PREPARATION OF THE SULPHATE OF ALUMINA.

By MM. HURIA and BRUNEL.

Sulphate of ammonia and alumina is placed in shallow earthenware vessels in a drying furnace. When it has lost all its water of crystallization, it is powdered and placed in a cast-iron cylinder, one end of which is closed with an iron cover, which is luted air-tight. From the other end of the cylinder a bent cast-iron tube issues, which is connected with leaden tubes perforated with a number of holes, and lying horizontally in a wooden water-cistern lined with lead; the water must absorb the gas evolved. A safety-tube prevents the rising of the water into the cylinder.

The products of the decomposition of the sulphate of ammonia and alumina are now to be expelled at a cherry-red heat; the sulphate of alumina remains in the cylinder. The sulphite of ammonia that goes over serves again for the preparation of the alum, after being changed into sulphate of ammonia by oxidation in the air. The drying-furnace lies above the furnace in which the cylinder is heated to redness, and is heated by it.—*Bull. de la Soc. d' Encourag.*, 1852, p. 199, and *Chem. Gaz.*, Sept. 15.

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#### ON THE MICROSCOPE, AS A MEANS OF DETECTING THE ADMIXTURE OR ADULTERATION OF DRUGS.

“You are doubtless conversant with the recent very extensive employment of the microscope for disclosing the adulteration of food. No less useful—no less powerful is it in disclosing the contamination of drugs; and I cannot too strenuously recommend you to employ it.” Such was the language used by Dr. Pereira, in his introductory lecture on *Materia Medica*, delivered this year at the Pharmaceutical Society.

Many persons of no mean skill in chemistry, smiled incredulously at the results obtained, when they ascertained that the principal instrument employed by Dr. Hassal, the *Lancet* commissioner, in detecting the adulteration of substances used as food, was the microscope. We confess that we entertained con-



siderable doubt as to the accuracy of the extraordinary revelations that he gave, confidently, to the public in the pages of the *Lancet*. Every person conversant with chemistry was well aware what a useful adjunct the microscope has been to the chemical analyst, in distinguishing the form of minute crystals, and thereby determining their true character, when mixed with organic or inorganic bodies; but few foresaw that it might be employed as a means of analysis itself, in mixtures of organised substances.

In fact, in physiological chemistry, the microscope is preferred to every other resource as a means to detect the presence of minute quantities of organic crystalline compounds in the complex fluids secreted by animals.

Dr. C. G. Lehmann, a very high authority, observes, when speaking of the tests for the detection of urea, that the best method to ascertain its presence, is by the formation of its salts with nitric and oxalic acids, and to submit the salts so formed, when crystallised by the evaporation of their menstruum, to microscopic examination, and thus to ascertain the correct shape of the crystals, "which, if the investigation is to be unquestionable, the acute angles must be always measured;" for, as he farther remarks, that "a good crystallometric determination yields the same certainty as an elementary analysis, which, in these cases, would never or extremely seldom be possible."\* These evidences of the value of the microscope as a means of testing by the physical characteristics of a crystalline substance, might be multiplied almost innumera- bly from the same and other authorities.

However extraordinary the statement may appear, that Dr. Lehmann and others prefer the microscope as the agent by which the composition, or some of the ingredients, of a complex body are to be determined, when those ingredients are crystalline, the results of the investigations of Drs. Hassal and Pereira, and Mr. Quekett, are yet more remarkable and worthy of attention; for they prove that the microscope is the only, or at least the only good means which science has at present discovered to detect the admixture or adulteration of non-crystalline organic substances.

\* Lehmann's Physiological Chemistry, vol. i. pp. 150 and 160.

Dr. Pereira first impressed on the attention of pharmacutists the value of this instrument for discriminating between the numerous varieties of starch which are offered to the public for domestic purposes, under an equal variety of names; but it remained for Dr. Hassal\* to show its unlimited valuable applications.

The conclusions that may be drawn from the *Lancet* commissioner's laborious researches are, that the solid portions of all organised structures present to the eye, when aided by the microscope, such distinguishing characteristics, that, by an experienced observer, they can be referred to their respective origins: and that when even these portions are in a state of minute subdivision, the form of the cells, the shape of the starch granules, and the condition of the spiral vessels, and other indications, afford an equally accurate result.

To assert that Dr. Hassal has never arrived at an erroneous conclusion in his investigations, would be to ascribe to him something more than human; but to state that his results are surprisingly accurate, would be within the limits of truth; to which statement even the victims, as no doubt they consider themselves, of his indefatigable and ruthless microscopic skill, have repeatedly borne testimony.

As this paper is written for the student, and not for the initiated in these matters, we shall here briefly indicate the method by which skill, when aided by perseverance, may be acquired in detecting the adulteration of drugs, by microscopical observation. It is unnecessary to describe the construction of the microscope, as it is an instrument that most persons are familiar with, and a description of it may be found in many standard works; but it may be observed that the instrument necessary for this purpose should possess a magnifying power from 200 to 400 diameters.

We shall assume, to illustrate the method, that a sample of suspected powdered rhubarb has been taken for examination: but before the investigator can pronounce an opinion, or form a judgment of the suspected sample, it is necessary that he should be well acquainted with the characteristics of powdered rhubarb of authenticated genuineness, which he can readily prepare for himself.

It is by a comparative examination of the genuine and the adul-

terated article, under the microscope, that the presence of foreign substances in the adulterated powder, can be distinguished; because, as previously stated, the form of the starch granules, the shape of the cells of each organic substance, have a character peculiar to themselves, by which their source may be determined.

By a similar process, the question can be answered, when it is thus ascertained that a drug has been adulterated—by what substance or substances has this drug been contaminated?

The investigator will know, from previous experience, those materials which are most suitable for the sophistication of the genuine article, and by rendering himself familiar with their appearances in a pulverized state, when viewed by the microscope, he will readily detect their presence in the adulterated powder, and be able to refer them to their origin. But in this instance, and all others, he must learn the microscopical characteristics of any substance whose detection is desirable, from specimens, the genuineness of which he can vouch for.

To avoid a constant repetition of the examination of every substance, whose microscopical characteristics it may be desirable to be acquainted with, and which are difficult to commit to memory, it will be advisable, for the purpose of reference, to obtain drawings of them, which is most readily and perfectly accomplished by the aid of the camera lucida.

Moreover, it should be borne in mind, that the microscope can never supplant chemical analysis in detecting the admixture or adulteration of such drugs as opium, scammony, and others, which are the concrete juices or exudations of plants; but for powders of barks, roots, leaves, and such organised substances as consist of cellular tissue, ligneous fibre, &c., it is in the highest degree superior to every other known or available means for the discovery of their sophistication.

In conclusion, it may be remarked that, although investigations by the aid of the microscope require less time for their performance, and certainly not greater ability for the acquirement of the necessary skill, than chemical analysis, yet no one can expect to be *au fait* in the application of this instrument for the purposes described, except by the devotion of much time and attention to its study.—*Annals of Pharmacy*, Jan. 1852.



## OBSERVATIONS UPON A GENERAL METHOD FOR DETECTING THE ORGANIC ALKALOIDS IN CASES OF POISONING.

BY PROFESSOR STAS, of Brussels.

Whatever certain authors may have said on the subject, it is possible to discover in a suspected liquid all the alkaloids, in whatever state they may be. I am quite convinced that every Chemist who has kept up his knowledge as to analysis, will not only succeed in detecting their presence, but even in determining the nature of that of bodies, the properties of which have been suitably studied. Thus he will be able to discover conia, nicotine, aniline, picoline, petinine, morphine, codeine, narcotine, strychnine, brucine, veratrine, colchicine, delphine, emetine, solanine, aconitine, atropine, and hyoscyamine. I do not pretend to say that the chemical study of all these alkaloids has been sufficiently well made to enable the experimenter who detects one of them to know it immediately, and affirm that it is such an alkaloid, and not such another. Nevertheless, in those even which he cannot positively determine or specify, he may be able to say that it belongs to such a family of vegetables—the Solanaceæ, for example. In a case of poisoning by such agents, even this will be of much importance. The method which I now propose for detecting the alkaloids in suspected matters, is nearly the same as that employed for extracting those bodies from the vegetables which contain them. The only difference consists in the manner of setting them free, and of presenting them to the action of solvents. We know that the alkaloids form acid salts, which are equally soluble in water and alcohol; we know also that a solution of these acid salts can be decomposed so that the base set at liberty remains either momentarily or permanently in solution in the liquid. *I have observed that all the solid and fixed alkaloids above enumerated, when maintained in a free state and in solution in a liquid, can be taken up by ether when this solvent is in sufficient quantity.* Thus, to extract an alkaloid from a suspected substance, the only problem to resolve consists in separating, by the aid of simple means, the foreign matters, and then to find a base which, in rendering the alkaloid free, retains it in solution, in order that the ether may extract it from the liquid. Successive treatment by water and alcohol of different degrees of concentration, suffices for separating the



foreign matters, and obtaining in a small bulk a solution in which the alkaloid can be found. The bicarbonates of potash or soda, or these alkalies in a caustic state, are convenient bases for setting the alkaloids at liberty, at the same time keeping them wholly in solution, especially if the alkaloids have been combined with an excess of tartaric or of oxalic acid.

To separate foreign substances, animal or otherwise, from the suspected matters, recourse is commonly had to the tribasic acetate of lead, and precipitating the lead afterwards by a current of sulphuretted hydrogen. As I have several times witnessed, this procedure has many and very serious inconveniences. In the first place, the tribasic acetate of lead, even when used in large excess, comes far short of precipitating all the foreign matters; secondly, the sulphuretted hydrogen, which is used to precipitate the lead, remains in combination with certain organic matters which undergo great changes by the action of the air and of even a moderate heat; so that animal liquids which have been precipitated by the tribasic acetate of lead, and from which the lead has been separated afterwards by hydrosulphuric acid, color rapidly on exposure to the air, and exhale at the same time a putrid odor, which adheres firmly to the matters which we extract afterwards from the liquids. The use of a salt of lead presents another inconvenience, viz., the introduction of foreign metals into the suspected matters, so that that portion of the suspected substance is rendered unfit for testing for mineral substances. The successive and combined use of water and alcohol at different states of concentration, permits us to search for mineral substances, whatever be their nature, so that in this way nothing is compromised, which is of immense advantage when the analyst does not know what poison he is to look for.

It is hardly necessary to say, that in medico-legal researches for the alkaloids, we ought never to use animal charcoal for decolorizing the liquids, because we may lose all the alkaloid in the suspected matters. It is generally known that animal charcoal absorbs these substances at the same time that it fixes the coloring and odoriferous matters.

[This is no doubt true; we must not use animal charcoal to decolorize, and then look for the alkaloid in the *liquid*, but we may use it at least in the case of strychnia and some of the non-volatile

alkaloids, to separate them, and then we look for them in *the charcoal*. See notice of Graham and Hofmann's Process for Detecting Strychnia: *Monthly Journal*, August, 1852, p. 140; *Pharmaceutical Journal*, vol. xi., p. 504, May, 1852.]

The above observations do not proceed from speculative ideas only, but are the result of a pretty long series of experiments which I have several times employed for discovering these organic alkaloids. To put in practice the principles which I have thus explained, the following is the method in which I propose to set about such an analysis:—I suppose that we wish to look for an alkaloid in the contents of the stomach or intestines; we commence by adding to these matters twice their weight of pure and very strong alcohol:\* we add afterwards, according to the quantity and nature of the suspected matter, from ten to thirty grains of tartaric or oxalic acid—in preference tartaric; we introduce the mixture into a flask, and heat it to 160° or 170° Fahrenheit. After it has completely cooled it is to be filtered, the insoluble residue washed with strong alcohol, and the filtered liquid evaporated in vacuo. If the operator has not an air-pump, the liquid is to be exposed to a strong current of air at a temperature of not more than 90° Fahrenheit. If, after the volatilization of the alcohol, the residue contains fatty or other insoluble matters, the liquid is to be filtered a second time, and then the filtrate and washings of the filter evaporated in the air-pump till nearly dry. If we have no air-pump, it is to be placed under a bell-jar over a vessel containing concentrated sulphuric acid. We are then to treat the residue with cold anhydrous alcohol, taking care to exhaust the substance thoroughly; we evaporate the alcohol in the open air at the ordinary temperature, or still better, in vacuo; we now dissolve the acid residue in the smallest possible quantity of water, and introduce the solution into a small test-tube, and add little by little pure powdered bicarbonate of soda or potash, till a fresh quantity produces no further effervescence of carbonic acid. We then agitate

\* When we wish to look for an alkaloid in the tissue of an organ, as the liver, heart, or lungs, we must first divide the organ into very small fragments, moisten the mass with pure strong alcohol, then express strongly, and by further treatment with alcohol exhaust the tissue of everything soluble. The liquid so obtained, is to be treated in the same way as a mixture of suspected matter and alcohol.

the whole with four or five times its bulk of pure ether, and leave it to settle. When the ether swimming on the top is perfectly clear, then decant some of it into a capsule, and leave it in a *very dry place* to spontaneous evaporation.

Now, two orders of things may present themselves; either the alkaloid contained in the suspected matter is liquid and volatile, or solid and fixed. I shall now consider these two hypotheses.

*Examination for a Liquid and Volatile Alkali.*

We suppose there exists a liquid and volatile alkaloid. In such a case, by the evaporation of the ether, there remains in the inside of the capsule some small liquid striæ which fall to the bottom of the vessel. In this case, under the influence of the heat of the hand, the contents of the capsule exhale an odor, more or less disagreeable, which becomes, according to the nature of the alkaloid, more or less pungent, suffocating, irritant; it presents, in short, a smell like that of a volatile alkali masked by an animal odor. If we discover any traces of the presence of a volatile alkaloid, we add then to the contents of the vessel, from which we have decanted a small quantity of ether, one or two fluid drachms of a strong solution of caustic potash or soda, and agitate the mixture. After a sufficient time, we draw off the ether into a test-tube; we exhaust the mixture by two or three treatments with ether, and unite all the ethereal fluids. We pour afterwards into this ether, holding the alkaloid in solution, one or two drachms of water, acidulated with a fifth part of its weight of pure sulphuric acid, agitate it for some time, leave it to settle, pour off the ether swimming on the top, and wash the acid liquid at the bottom with a new quantity of ether. As the sulphates of ammonia, of nicotine, aniline, quinoleine, picoline, and petinine, are entirely insoluble in ether, the water acidulated with sulphuric acid contains the alkaloid in a small bulk, and in the state of a pure sulphate; but as the sulphate of conia is soluble in ether, the ether may contain a small quantity of this alkali, but the greater part remains in the acidulated watery solution. The ether, on the other hand, retains all the animal matters which it has taken from the alkaline solutions. If it on spontaneous evaporation leaves a small quantity of a feebly-colored yellowish residue, of a repulsive animal odor, mixed with a certain quantity of sulphate of conine, this alkaloid

exists in the suspected matter under analysis. To extract the alkaloid from the solution of the acid sulphate, we add to the latter an aqueous and concentrated solution of potash or caustic soda, we agitate and exhaust the mixture with pure ether; the ether dissolves ammonia, and the alkaloid is now free. We expose the ethereal solution at the lowest possible temperature to spontaneous evaporation; almost all the ammonia volatilizes with the ether, whilst the alkaloid remains as residue. To eliminate the last traces of ammonia, we place for a few minutes the vessel containing the alkaloid in a vacuum over sulphuric acid, and obtain the organic alkaloid with the chemical and physical characters which belong to it, and which it is now the Chemist's duty to determine positively.

I applied, on the 3d of March, 1851, the process which I have described, to the detection of nicotine in the blood from the heart of a dog poisoned by two cubic centimetres [0.78 C.I.] of nicotine introduced into the œsophagus, and I was able in a most positive manner to determine the presence of nicotine in the blood. I was able to determine its physical characters; its odor, taste, and alkalinity. I succeeded in obtaining the chloro-platinate of the base perfectly crystallized in quadrilateral rhomboidal prisms of a rather dark yellow color, and to ascertain their insolubility in alcohol and ether.

I have applied the same process for the detection of conia in a very old tincture of hemlock, which my friend and colleague M. de Hemptinne was so kind as to put at my disposal; and I was equally successful in extracting from the liquid colorless conia, presenting all the physical and chemical properties of this alkali. I was also able to prove that the ether which holds conia in solution, carries off a notable portion of this alkaloid when the solvent is exposed to spontaneous evaporation.

#### *Examination for a Solid and Fixed Alkaloid.*

Let us now suppose that the alkali is solid and fixed; in that case, according to the nature of the alkali, it may happen that the evaporation of the ether resulting from the treatment of the acid matter, to which we have added bicarbonate of soda, may leave or not a residue, containing an alkaloid. If it does, we add a solution of caustic potash or soda to the liquid, and agitate it briskly with ether. This dissolves the vegetable alkaloid, now free and re-



maining in the solution of potash or soda. In either case, we exhaust the matter with ether. Whatever be the agent which has set the alkaloid free, whether it be the bicarbonate of soda or potash, or caustic soda or potash, it remains, by the evaporation of the ether, on the side of the capsule as a solid body, but more commonly a colorless milky liquid, holding solid matters in suspension. The odor of the substance is animal, disagreeable, but not pungent. It turns litmus paper permanently blue.

When we thus discover a solid alkaloid, the first thing to do is to try and obtain it in a crystalline state, so as to be able to determine its form. Put some drops of alcohol in the capsule which contains the alkaloid, and leave the solution to spontaneous evaporation. It is, however, very rare that the alkaloid obtained by the above process is pure enough to crystallize. Almost always it is soiled by foreign matters. To isolate these substances, some drops of water, feebly acidulated with sulphuric acid, are poured into the capsule, and then moved over its surface, so as to bring it in contact with the matter in the capsule. Generally we observe that the acid water does not moisten the sides of the vessel. The matter which is contained in it separates into two parts, one formed of greasy matter, which remains adherent to the sides—the other alkaline, which dissolves and forms an acid sulphate. We cautiously decant the acid liquid, which ought to be limpid and colorless, if the process has been well executed; the capsule is well washed with some drops of acidulated water, added to the first liquid, and the whole is evaporated to three-fourths in vacuo, or under a bell-jar over sulphuric acid. We put into the residue a very concentrated solution of pure carbonate of potash, and treat the whole liquid with absolute alcohol. This dissolves the alkaloid, while it leaves untouched the sulphate of potash and excess of carbonate of potash. The evaporation of the alcoholic solution gives us the alkaloid in crystals.

It is now the Chemist's business to determine its properties, to be able to prove its individuality. I have applied the principles which I have just expounded to the detection of morphine, iodine, strychnine, brucine, veratrine, emetine, colchicine, aconitine, atropine, hyoscyamine—and I have succeeded in isolating, without the least difficulty, these different alkalies, previously mixed with foreign matters.

I have thus been able to extract, by this process, morphine from opium, strychnine and brucine from nux vomica, veratrine from extract of veratrum, emetine from extract of ipecacuanha, colchicine from tincture of colchicum, aconitine from an aqueous extract of aconite, hyoscyamine from a very old extract of henbane, and atropine from an equally old tincture of belladonna. Thus it is in all confidence that I submit this process to the consideration of Chemists who undertake medico-legal researches.—*Bulletin de l'Académie Royale de Médecine de Belgique*, tom. vi., No. 2; *Edinburgh Monthly Journal of Medical Science, and Pharm. Jour.*

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## CHEMICAL RESEARCHES ON CROTON OIL.

By M. DUBLANC,

Director of the Laboratory of the Central Pharmacy of the Parisian Hospitals.

The object of these researches was to decide whether croton oil contained an acid, volatile at a moderate temperature; and if so, whether such acid is the active principle of the oil? The author found that when an alcoholic solution of croton seeds was distilled, the distillate possessed no acidity, whilst the residue in the retort was more acid than the expressed oil when treated by litmus paper. He also found the ethereal tincture of croton seeds to be acid. To ascertain if this acid was volatilized by exposure to a current of air, he made the following arrangement: The ethereal tincture was placed in a two-necked bottle, a tube passing through a cork in one neck to the bottom, the other was connected with Liebig's potash tube, containing tincture of litmus, this with a globular vessel containing alcohol, which vessel was connected with the top of a reservoir of water, furnished below with a stop-cock, on opening which a current of air flowed through the arrangement to the reservoir as the water ran out, so as to convey with it the ethereal vapor and any acid that might be volatile. On examining the tincture of litmus and alcohol, no evidence of acid was obtained. A second experiment, in which a much larger quantity of air and the oil arranged under circumstances more favorable for the volatilization of any volatile acid should it exist, also failed.

Mr. Dublanc then sought to extract the acid from the oil if pos-

sible. He agitated one part of oil with ten of the alcohol, and allowed it to rest. The alcohol dissolved six per cent. of the oil, and with it the acid, the coloring matter, and part of the pungency. The undissolved oil had taken up fifty per cent. of alcohol. On separating the oil dissolved in the alcohol, it was more viscid, pungent and acid, than the original oil. On the other hand, when the portion not dissolved by the alcohol is treated three times with alcohol, its volume is diminished, and it becomes entirely free from acrimony, and it may be taken in the mouth with impunity, is soluble in all proportions in ether, and has a specific gravity of .92.

These experiments proved that croton oil is not homogenous in its composition. Our author then asks the question, is it possible by further attempts to isolate the active principle from the oily vehicle in which it is dissolved?

To solve this, he agitated four pounds of croton oil with about a pound of alcohol, occasionally for several days. The upper alcoholic layer was decocted, shaken first with water, and the ethereal solution evaporated, giving rise to pungent effluvia, strongly affecting the eyes and nostrils. The oil thus obtained is dark brown, opaque, thick, possessed of strong smell and acidity. Applied to the skin, it causes almost instantaneous pain, followed by a blister. It is soluble in alcohol and ether in all proportions, and when mixed with nine parts of olive oil it is more powerful than ordinary castor oil.

The author infers from these experiments that a little ingenuity will succeed in isolating the active principle of the oil, which he proposes to attempt in future experiments.—*Abridged from Annals of Pharmacy, April 1852, and Repertoire de Pharmacy.*

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#### ON THE SACCHARINE STRENGTH OF SYRUP OF IODIDE OF IRON.

By W. TOZIER.

According to the authority of M. Guibourt, the most perfect simple syrup consists of 30 parts of sugar to 16 of distilled water, the specific gravity of which syrup is represented by 1.320; for practical purposes, however, double the amount of sugar as of liquid menstruum has been found more convenient, and is now

eligibly adopted in the preparation of the Dublin and London Pharmacopœias. It is a matter of surprise that in this partitioning of the quantities of sugar and water, the syrup under consideration should have formed a remarkable exception to this rule, as there is scarcely another instance amongst those compounds where the conservative character of the compound depends more on its due proportion of sugar. In the Dublin syrup, this deficiency is very perceptible, giving to it an instability of character that detracts much from its value, a matter of no small importance to the dispenser, as he cannot with facility reduce it to his extemporaneous formulary, without incurring a certain amount of trouble and some expense in its preparation, both of which might have been readily obviated by a slight modification of the present formula. This, no doubt, may be referred to a desire of the College to get rid of the inconveniences attending the solution of the sugar, in the second part of the process, by the introduction of simple syrup, and by this means abridge the length of the operation, and to a certain extent divest it of a portion of its complexity; but as this cannot be done without proportionately increasing the liquid portions of the compound, there will be found a perversion of the object, as the resulting syrup is so weak in saccharine strength as to be most favorably disposed to decomposition *in limine*. Indeed, this would scarcely demand to be demonstrated, it is so evident; for as the 6 fluid ounces of simple syrup employed, contain but 5.33 parts of sugar by weight, there will be required 5.33 parts of fluid necessary to bring it up to its required amount, 8 ounces. If we correct this deficiency by reducing this syrup to the saccharine strength of simple syrup, which should properly form the type of these compounds, the 8 fluid ounces indicated should possess, independent of its saline constituent, 7.11 parts of sugar by weight; for as this amount is represented by  $1.330 \div 8 = 10.64$  ounces, the proportions necessary will be 7.11 parts of sugar, and 3.55 of the solution of iodide of iron, to occupy this bulk, showing a deficiency of 1.78 parts of sugar in the present form, which are necessarily made up by the addition of distilled water. In the London formula a similar deficiency is found to exist, but not, however, to the same extent; for were we to ascribe the due amount of sugar to the 15 fluid ounces of



syrup there indicated, we should find that it would be necessary to employ 13.33 ounces by weight, Avoirdupois (12.14 Troy,) in place of the 10 ounces present, for  $1.333 + 15 = 19.9$  ounces by weight, or 13.33 sugar + 6.66 liquid iodide of iron, assuming the specific gravity of the London simple syrup to be similar to that of the Dublin, which it is very nearly. If we take the Edinburgh formula to represent the true proportion of sugar necessary, the London formula should be represented by 11.25 ounces Troy, in place of the 10 ounces at present employed, and the Dublin by 6 ounces Troy or 6.255 Avoirdupois, in place of 5.33 ounces; but in this there is a deficiency likewise, as the  $4\frac{1}{2}$  ounces there should be more correctly represented by 4.85 ounces, or something better than  $4\frac{3}{4}$  ounces Troy.

These discrepancies at first sight appear insignificant, and probably unworthy of much attention; however, as accuracy should characterize all our operations, and as the value of a compound very much depends on it, any deviation from this rule, especially in so sensitive a preparation as iodide of iron, seems to a certain extent unwarrantable. When the solution of iodide of iron is treated with double its weight of sugar, it is found to keep admirably well for a considerable period, especially when protected from the air and light, and in a cool situation, taking care in the first instance, after the solution of the sugar is effected, to bring it near its boiling point, and in this state secluded in bottles perfectly air-tight. As these need only contain from two to three ounces each, and can be conveniently kept in stock, there will be less likelihood of their contents spoiling, than when a large quantity of the syrup is kept in a dispensing bottle, the desultory opening of which, from time to time, rapidly produces this change. It might be urged that the amount of salt it contains would necessarily dispose it to crystallization, with the above amount of sugar, and at once frustrate the object of its conservation; this, however, will be found not the case, as it shows no symptom of crystallization under the circumstances, at least, for a very considerable time, which is another important reason for employing this quantity of sugar.

The following formula is suggested as presenting a useful innovation of the Dublin process, as it will be found, owing to the omission of a portion of the manipulation there directed, not to

assume a more complex form, nor less calculated to effect a good product.

Take Pure Iodine,	5 drachms.
Iron turnings, separated by the magnet,	6 drachms.
Distilled water,	3½ ounces.
Powdered sugar,	7 ounces.

Introduce the iodine, iron, and 2½ ounces of water into a glass flask; rotate in the hand for some minutes, until the solution loses its red color and becomes unaffected by cold amidine. Filter the solution in the sugar, washing the residue with the remaining portion of water, and dissolve, by the aid of a water bath.

The above proportions, when combined, will measure exactly 8 fluid ounces; should there, however, be any deficiency, it may be made up by the addition of simple syrup.

The iron, it will be observed, is taken in double the pharmacopœial quantity, as this amount is found to expedite the operation more rapidly, without having undue influence otherwise, while the application of heat during the first part of the process is altogether avoided; as the whole amount of syrup, viz: 8 ounces, contains 333·82 grains Avoirdupois of protoxide of iron, the proportion in each fluid drachm will be found to be 5·21 grains.

The concentrated form is an advantage in a pharmaceutical point of view, as it can easily be reduced to any given strength by the addition of syrup, orange-flower water, or other vehicle, at the will of the practitioner; it is also less likely to spoil, from being less exposed to atmospheric agency. I am disposed to think, that from the number of attempts made to reduce this compound to what might be thought more eligible forms in medical practice, all have failed to realize the test of experience, except this alone; for, chemically and medically considered, I believe it to be a most interesting and valuable preparation for the different objects of its use.

KINGSTOWN.

[NOTE.—The solution of iodide of iron of the United States Pharmacopœia, is also obnoxious to the criticism of M. Tozier on the British formulæ. Twelve ounces (Troy) of sugar are contained in twenty fluid ounces of the solution, a less proportion than in the formulæ of Great Britain. This arose from the idea of retaining the old name “Liquor,” which could not have been appended for a thick syrup. Experience proves, however, that although the

protective power of this preparation of sugar is considerable, yet a saturated saccharine solution of the protiodide resists the penetration of the atmospheric oxygen much more effectually. The only objection to the syrupy consistence is a less facility of dropping, a fault too trivial to weigh against the increased protective power given by the additional sugar.—ED. AMERICAN JOURNAL OF PHARMACY.]

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ON THE TESTING OF THE METALLIC SPOTS DEPOSITED BY  
BURNING HYDROGEN ON PORCELAIN.

BY H. WACKENRODER.

A new method of distinguishing arsenical and antimonial spots was some time since proposed by Slater. Wackenroder has tried this method, and published the following observations on the mode of determining arsenic by separation from arseniuretted hydrogen.

If the hydrogen gas produced by the action of diluted pure or ordinary purified sulphuric acid upon common zinc be kindled, and the strong current of gas directed against white earthenware, a black spot of lead will be produced by the reduction of the lead-glazing of the earthenware.

If a very strong current of hydrogen gas be developed, and no deposit of metal takes place from its flame upon porcelain, we may feel perfectly sure of the purity of the gas.

But if muriatic acid be employed instead of sulphuric acid for the production, or if any chloride exists in the fluid used, metallic spots may be formed during the rapid evolution of the gas, which however are only spots of zinc. They are distinguished in this manner, that on pouring over them diluted muriatic acid, they rapidly disappear, and that they are also readily removed by means of hypochlorite of soda.

To avoid error, it is also necessary that no nitric acid or sulphuret be present in the apparatus used in the development of the gas, which may be best formed of a two-necked bottle with a funnel-tube and a tube bent at right angles and drawn to a point, for the passage of the gas. The nitrous acid formed in the one case readily decomposes antimoniuiretted and arseniuretted hydrogen gas, whilst a sulphuret readily causes the formation of some sulphuretted hydrogen gas, by which the spots of arsenic and antimony receive more or less of a reddish or yellowish color.

Granulated zinc with dilute sulphuric acid evolves hydrogen gas

better than pieces of crystalline zinc. The evolution of gas, however, easily becomes so violent that it must be moderated by the addition of water. When it has gradually become weak, it may be remarkably enlivened, frequently even to a most violent degree, by the addition of a small quantity of a solution of arsenious or arsenic acid. This circumstance must therefore not be neglected in the employment of Marsh's apparatus in judicial investigations.

1. *Arsenical Spots*.—When sufficient hydrogen gas has been generated to expel the atmospheric air from the bottle, the fluid or substance (such, for instance, as a piece of green paper) which is to be examined for arsenic, is introduced into it. If there be a funnel-tube to the flask, the addition of small quantities of the liquid to be examined to the sulphuric acid employed to generate the gas is readily effected by stopping the gas-tube with the finger, so that as much acid rises into the funnel as it can hold. The arsenical spots produced on the porcelain are rapidly dissolved by pouring over them hypochlorite of soda, and the porcelain becomes perfectly clean; on the other hand, the spots do not disappear on being poured over with dilute muriatic acid. If the spots of arsenic be shining, and consequently proportionately thick, the hypochlorite of soda is somewhat longer in effecting their solution, which however it always does in a period of not more than a few seconds.

2. *Antimonial Spots*.—If a little tartar-emetic (or any other compound of antimony) be added to the mixture of zinc and sulphuric acid in the flask, antimoniuiretted hydrogen is immediately given off with the hydrogen. Whilst the spots on the porcelain are still faint and of a dull appearance, they are acted upon, after some time, by hypochlorite of soda, in such a manner that they become gradually indistinct, rather by being washed off by the alkaline fluid, than in consequence of becoming dissolved in it. But if the antimonial spots be black and shining, and consequently more firmly fixed on the porcelain, they completely withstand the action of both hypochlorite of soda and diluted muriatic acid, but are quickly dissolved by a mixture of the two liquids.

3. *Arsenical Spots containing Antimony, and Antimonial Spots containing Arsenic*.—If any arsenical fluid containing antimony



be introduced into the gas apparatus, the spots on the porcelain at first contain principally only arsenic, apparently in consequence of the antimony being less volatile; but if shining spots be produced on the porcelain, which contain more antimony, these resist the action of hypochlorite of soda in a greater or less degree, and are often only eaten away round the edges.

Small quantities of antimony in the arsenical spots render these strong and more shining, but do not prevent their solution in hypochlorite of soda. The hypochlorite of soda may therefore be used with the greatest certainty in distinguishing purely arsenical from purely antimonial spots, which indeed is the principal point in judicial investigations, but not in detecting a trace of antimony in arsenical spots; it also serves in some measure to detect traces of arsenic in antimonial spots. It might be possible, but probably useless in practice, to ascertain by comparative investigations the quantitative proportions of arsenic and antimony at which distinct differences occur in the behaviour of mixed metallic spots with hypochlorite of soda.—*Chemical Gazette*, Aug. 2, 1852, from *Archiv der Pharm.*, lxx. p. 14.

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#### PREPARATION OF PURE FATTY ACIDS FOR THE MANUFACTURE OF CANDLES BY THE DISTILLATION OF COMMON FATS.

At the last Conversazion, held at the house of the Pharmaceutical Society, a series of specimens were exhibited illustrating the process adopted at the works of Price's Patent Candle Company for obtaining a white and hard fatty substance, suitable for the manufacture of the best description of candles, by distillation from palm oil and other cheap fats. The following description of the details of the process is given in the "Reports of the Juries" of the Great Exhibition.

*Sulphuric Saponification.*—About twenty tons of fat, say palm oil, are placed in a large lead-lined vat, and fused by a steam jet. The fluid mass, after being allowed to settle, has now to be exposed to the combined action of concentrated sulphuric acid and heat, and for this purpose is pumped up into the acidifying vessel, in which its temperature is raised to  $177^{\circ}$  Cent. ( $350^{\circ}$  Far.). The means of heating is a jet of low-pressure steam, which, in its course

from the boiler, passes through a series of iron pipes heated in a furnace. The quantity of acid used is in the proportion of 6 lbs. for 112 lbs. of palm-oil. In this operation the palm-oil is decomposed and becomes much blackened. Withdrawn at that period it is seen that an important change has been effected by the action of the acid, as the mass now readily crystallizes to a tolerably solid fat. The fat is now drawn off from the acid and transferred to the washing-tank, where it is boiled up with water by means of a steam-jet.

*Distillation.*—After one or two washings the blackened fat is withdrawn and pumped up to the supply-tank, which commands the stills. The stills, which are made of copper, are heated by an open grate; each still is capable of holding five tons of fat. When charged, the temperature is raised to  $293.5^{\circ}$  Cent. ( $560^{\circ}$  F.), and low-pressure steam passed through the mass. This steam is previously heated by passing through a system of iron pipes placed in a furnace.

The current of steam carries with it the vapor of the fatty acids, and thus facilitates the process. The mixed vapors of fatty acids and waters pass together to a series of vertical pipes, which retain a temperature above  $100^{\circ}$  Cent. ( $212^{\circ}$  F.), where the fats only condense while the steam passes to a second refrigerator, cooled by a current of water; here it is condensed along with the minute quantity of fat carried over by it. A separating tank, from which the water escapes at the bottom, whilst the fats float on the top, serves to remove this small quantity.

*Distillation of the Residue.*—After continuing the distillation for a certain period, the residue in the still is transferred to another still, formed of iron pipes, set in a furnace, and there submitted to a much higher temperature, and a jet of steam more strongly heated. The residue left in these iron stills is a sort of pitch, and is applied to the same use as ordinary pitch. By this means an additional quantity of fatty acids is obtained.

The fatty acids, as they run from the still, are used to a great extent for the manufacture of candles, without pressing, and form what are called *composite candles*, which possess all the advantages of being self-snuffing, but are more fusible and softer than the pressed stearic acid candles.

A large proportion of the distilled fats, however, is pressed, to make a better sort of candle, and for this purpose fifty hydraulic presses are employed.

*Cold-Pressing.*—The fats are spread by ingenious machinery on woven mats, and submitted to powerful cold-pressure between iron plates; the oleic, or metoleic acid runs out, and is collected, and chiefly exported to Germany, where it is employed in soap-making.

*Hot-Pressing.*—After cold-pressing, the fat acids are subjected to hot pressure in hydraulic presses, confined in a chamber heated by steam. The pressed cakes, after the removal of the edges, are melted in contact with a little diluted sulphuric acid, and run into blocks. When the reporters visited the works the Company were distilling at the rate of 130 tons of palm-oil per week.

Pressed cocoa-nut oil is largely employed to mix with the pressed acids of palm-oil to make the best composite candles.

Price's Candle Company is the most colossal establishment in the world in this branch of chemical manufacture; possessed of five distinct manufactories, besides plantations of cocoa-nut trees in Ceylon, of a capital but little short of half a million sterling, and employing, notwithstanding the best arrangement for economising labor, 800 workpeople, it is not surprising that they divide annually in profits between £40,000 and £50,000.—*Pharmaceutical Journal*, Sept. 1852.

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#### ON THE PRESENCE OF IODINE IN VARIOUS PLANTS, WITH SOME REMARKS ON ITS GENERAL DISTRIBUTION.

By STEVENSON MACADAM, Esq.

The Chemical Gazette of August 2d, 1852, contains an article under the above caption, extracted from the proceedings of the Botanical Society of Edinburgh, for July 8th, preceding, from which we extract the following:—

Mr. Chatin, of Paris, believes that the atmosphere, rain-water and soils contain iodine in an appreciable amount; that its proportion varies with the locality; and that its proportion in the atmosphere is related to the presence or absence of certain diseases. As an example, in the Swiss vallies goiter and cretinism are fre-



quent, whilst the proportion of iodine in the atmosphere is only one tenth of that in the neighborhood of Paris, where these diseases rarely exist. The interest and importance of Mr. Chatin's statements, should they be corroborated, induced Mr. Macadam to investigate the subject as regards Scotland both in relation to the atmosphere and the plants.

He commenced with the atmosphere; he caused the air to traverse, 1st, a tube containing slips of starch paper; 2d, a two necked gas-bottle containing about 3 ounces of a solution of caustic soda, during several hours of the morning, and the process continued in the afternoon with a solution of caustic potash. The starch papers did not exhibit the slightest coloration even when moistened; the solutions of potash and soda, however, on being treated with starch and nitric acid, at once exhibited the rose colored characteristic of the presence of iodine in small quantity. When, however, portions of the alkaline solutions not subject to the action of the air were tested, the same evidence of iodine was obtained. Hence, the necessity of a new experiment to guard against this difficulty.

He now passed the air through a tube filled with slips of damp starch paper; then through a gas bottle immersed in a freezing mixture; and lastly a gas bottle containing a solution of nitrate of silver. A continuous current of air was drawn through this arrangement during five hours, commencing at mid-day. At the conclusion, the papers were not altered in the slightest degree: the first gas bottle contained a quarter of an ounce of liquid, which gave no evidence of iodine to the most delicate tests, and the solution of silver had not been apparently changed, and did not give evidence of the slightest trace of iodine on the application of the most rigid tests.

The failure of these experiments, which were made at different heights on Arthur's Seat, led Mr. Macadam to make a more extended and complete trial at the Kinneil Iron Works at Borrowstounness, where the proprietor kindly offered every facility, by allowing the author to attach his apparatus to the blowing machine furnishing the blast to the furnaces under great pressure. Under these circumstances a rapid current of air was passed through a tube with starched paper; a condensing worm cooled by a freezing mixture and attached to a receiver, a tall jar containing chips of



pumice-stone and a few iron filings with sufficient water to cover them; a similar jar with pumice-stone, scrapings of clean lead, and solution of acetate of lead; and lastly, a condensing worm immersed in a freezing mixture and attached to a receiver. Air, under a pressure of 3 lbs. per square inch, was allowed to traverse this arrangement for four hours. It was then taken apart and examined. The slips of paper were not sensibly altered. The condensers contained a small quantity of liquid, which did not offer the slightest evidence of iodine to the most delicate tests. The contents of the jar containing iron filings was thrown on a filter, washed with cold water, half an ounce of solution of pure carbonate of potash added, and the whole evaporated to a quarter of an ounce and tested. No iodine was present. Lastly, the jar with lead scrapings was searchingly tested without any indication whatever of iodine. This experiment proved that 4000 cubic feet of air contained no appreciable iodine.

Mr. Macadam then sought for iodine in rain-water, and in several trials with three gallons each, was unable to detect any trace of that element, even from rain-water collected for him at the Shetland Islands where a constant marine atmosphere prevails. He therefore infers that even if the atmosphere of the ocean does contain iodine carried up mechanically in saline form during evaporation, it must be in quantity too minute to be detected.

The author now recurs to the existence of iodine in the potash of commerce as shown in his first experiment. He examined various specimens of the commercial alkali used in Edinburgh and Glasgow, which were derived from the United States, and Canada, and found that they all afforded iodine when examined. Our author infers that as the potashes from America are derived from the ashes of forest trees, that iodine must pre-exist in these trees, a belief rendered much more probable, when he was able to detect it in charcoal prepared in Scotland, from oak, elm and ash.

Mr. Macadam infers that the proportion of iodine in forest trees is extremely minute, because the weight of the potash they yield is small compared with their weight, and this contains only a very small amount of iodine. He also believes that succulent marsh growing plants are much richer in this element than trees.

Mr. Macadam made a number of experiments on plants growing

in the locks near Edinburgh, to ascertain whether they contained iodine. The plants were dried carefully, reduced to charcoal with the lowest heat compatible with the complete destruction of the organic matter, the residue reduced to fine powder, lixiviated by digestion in water, and the clear liquid evaporated. In every case Dr. Price's process was employed for detecting the iodine, viz: with nitrite of potash and hydrochloric acid.

Mr. Macadam has detected iodine in the following plants not previously known to contain it, viz :

Myosotis palustris,	Ranunculus aquatilis,
Mentha sativa,	Potamegeton densus,
Menyanthes trifoliata,	Chara vulgaris,
Equisetum limosum,	

And has confirmed its presence in :

Iris pseudo-acorus,	Phragmites communis,
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and in the ashes of coal.

As having some connection with the subject treated of, the author indicated that he had obtained distinct indications of the presence of bromine in the crude potashes. It is unfortunate that our tests for bromine are so much inferior in delicacy to those of iodine that it is necessary to operate upon very large quantities before the tests are distinct. There is no doubt that from its presence in trees it will be found in greater abundance in the more succulent plants; but the few trials yet made have been unsuccessful in determining its presence in any but crude Canadian and American potashes.

[This statement of Mr. Macadam, that he was only able to find bromine in American and Canadian potashes, may probably be explained by the fact that the American potash manufacturers are much in the habit of adding common salt to their ashes before leaching them, as well as to the potash kettle during the final fusion of the crude alkali, ostensibly for the purpose of *rendering it purer* and more fusible, but practically because it increases its weight. The result of its use is that a considerable portion of potash is converted into chloride of potassium, whilst the soda base of the common salt becomes carbonate of soda; thus materially injuring the article in commercial value. Now it is well known that many if not all the salt springs of the interior of New York, Pennsylvania and Virginia, contain bromide of sodium, often in such quantity as to be largely employed for extracting bromine. Now, may not the common salt derived from this source, and which is used by the makers of potash, be the origin of the

*bromine of the American Potashes?* In connection with this subject it will be an interesting point of research to seek for bromine in commercial salt from our salt springs, as well as in the salt manufactured from sea water.  
—EDITOR AMER. JOUR. PHARM.]

## ON THE LEAVES OF ARCTOSTAPHYLOS UVA-URSI.

By A. KAWALIER.

The following observations on the leaves of *Arctostaphylos Uva-Ursi* contain the results of experiments performed by Kawalier, in the laboratory of F. Rochleder.

The watery decoction of the leaves yields with a solution of sugar of lead a precipitate, which consists of nearly pure gallate of lead. The liquid filtered from the lead was distilled in a retort to the consistency of a syrup, and a small quantity of precipitated salt of lead removed by filtration. The filtrate was then deprived of the lead by sulphuretted hydrogen, and evaporated at a heat below the boiling point. After a few days a substance known by the name of *arbutin* crystallized from it in the form of needles.

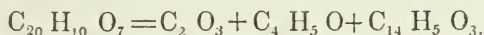
Purified by recrystallization it is in long, thin, colorless, bitter prisms, which dissolve in alcohol, in ether, and in water, fuse when heated, and solidify into an amorphous mass. In the air-dried condition the crystals of arbutin were composed of  $C_{23} H_{24} O_{21}$ . When dried at  $100^{\circ}C$ ., the formula is  $C_{32} H_{22} O_{19}$ , the crystals retaining their shape unaltered. Dissolved in water with emulsin they become decomposed. If the liquid be evaporated and the residue treated with ether, a substance is dissolved by the latter, which, when the ether is removed by evaporation, remains behind in a crystallized state. This is *arctuin*. This residue treated by ether contains grape-sugar, which is separated from the emulsin by alcohol, and purified by recrystallization from water. The formula of arctuin is  $C_{20} H_{10} O_7$ . Air-dried arbutin =  $C_{20} H_{10} O_7 + C_1 H_{14} O_{14} = C_{32} H_{24} O_{21}$ . Arbutin dried at  $100^{\circ} C.$  =  $C_{20} H_{10} O_7 + C_{12} H_{12} O_{12}$ .

The arctuin can be obtained by recrystallizing it from spirit of wine and water, and treating the solution with animal charcoal in the form of four-sided, colorless, bitter sweet acicular crystals, of four to six inches in length and two to three inches in width. From diluted aqueous solutions, which have not been completely

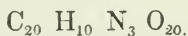
decolorized, it is obtained in the form of brown crystals, one inch in length and half an inch in thickness. According to its composition it may be considered as the product of oxidation of a substance, the composition of which is equal to that of camphor.



A watery solution of the crystals, mixed with a solution of chloride of iron, assumes an indigo-blue color; after a few seconds this changes to green, and then to brownish-yellow. This reaction indicates a connection with the salicylic group and the arcturic might perhaps be considered as a salicylite of the oxide of ethyle, combined with the elements of oxalic acid.



It is well known that *Gaultheria procumbens* (fam. of Ericineæ) contains salicylate of the oxide of methyle in combination with a substance at present unknown. Arbutin brought in contact with the vapour of ammonia and with atmosphere air assumes a slightly blueish color. In contact with the atmosphere and ammonia it becomes black. The ammoniacal compound thus formed is composed of



Arcturic is very easily changed by oxidizing bodies, and colored brown by a mere cold solution of bichromate of potash.

Besides gallic acid the leaves of uva-ursi contain also fat, wax, and chlorophylle, a small proportion of sugar, traces of an ethereal oil, and small proportions of a substance which, if heated with diluted sulphuric or muriatic acid, yields an ethereal oil, which readily attracts oxygen from the air and becomes dark colored. This oxydized oil has the formula  $= C_{20} H_{16} O_5$ . In addition to these substances the aqueous extract of the leaves contains also a resinous substance, which is obtained by heating the extract with sulphuric or muriatic acid, and purifying by solution in alcohol and precipitation with water. Its composition corresponds with the formula  $C_{30} H_{34} O_{30} = H O$ .  $C_{30} H_{34} (= 8 C_{10} H_8) - H_{30} + O_{30} + C_{30} H_{34} O_{30}$ .—*Pharm. Jour. Oct. 1, 1852, from Annalen d. Chem und Pharm., May, 1852, p. 241.*



## IMPROVEMENTS IN THE MANUFACTURE OF POTASSIUM.

By MM. MARESKA AND DONNY.

The process ordinarily employed in the manufacture of Potassium, is that invented by Brunner, which consists in exposing to a very great heat, an intimate mixture of charcoal and carbonate of potash, the produce of the calcination of crude tartar. Experience has shown that a given mixture of this kind, does not invariably yield the same quantity of potassium, notwithstanding the greatest care which may be taken.

The operation, often a very unproductive one, is also attended with many dangers and difficulties, arising from obstructions in the pipes, caused by deposits of carburetted products; obstructions which often occasion disastrous explosions. The attention of MM. Mareska and Donny having been called to these points, they have endeavored to ascertain the defects of the present process, and to suggest suitable remedies.

Their attention was first directed to the action which potassium suffers from the carbonic oxide, which is formed in the manufacture. It was well known that carbonic oxide, which has no action on potassium at a bright red heat, has a very powerful effect on it at lower temperatures; but MM. Mareska and Donny have shown, by a very simple operation, that when a mixture of carbonic oxide and potassium vapor is collected in a *large* receiver, kept *quite cool*, the potassium does not condense in a metallic state, but that a carburetted product is formed, from whence the metal cannot be obtained by simple distillation.

In Brunner's process, the potassium set at liberty by the reaction of carbon on carbonate of potash, is condensed in the tube placed intermediary between the retort and the receiver, or in the receiver itself, or else it is carried off by the gases out of the apparatus.

The result therefore is, that, in Brunner's process, the chief quantity of potassium must be lost, only a small portion being saved, which, being condensed in the tube, continues sufficiently fluid to run into the receiver, the portion which solidifies in the tube being there exposed to the contact of carbonic oxide, forms carburetted products, and thus becomes, as already noticed, the source of insurmountable and oftentimes very dangerous explosions.

That part which continues in a state of vapor when it reaches the receiver, and which afterwards condenses, is also lost; for the researches of MM. Mareska and Donny have shown that it passes completely to the state of a black substance not reducible by heat.

To prevent these obstructions, it has been recommended that the intermediary tube should be made as short as possible, and M. Mitscherlich adds to this recommendation the useful advice, to maintain it at a red heat up to the point of its connection with the receiver, in the hope that the metal would condense in the less heated part of the tube, and run, drop by drop, into the receiver. MM. Mareska and Donny observe, that by limiting to a sufficient extent the condensing surface of the pipe, we may effectively diminish the space in which these obstructions occur, and the difficulty of overcoming them by means of the iron rod with which the apparatus is furnished; but we cannot, by these means, entirely remove the difficulties, because, however limited may be the portion of the tube where the metal is condensed, we cannot prevent a part from passing to a solid state, remaining so, and by becoming carburetted, forming a source of obstruction.

Again, nothing is more difficult than to maintain, at a sufficiently low temperature, the lower part of a metallic tube, the remainder of which is kept at a red heat. The greater part of the potassium reduced, escapes in the state of vapor the whole length of the tube, and, on arriving in the receptacle, is lost.

From these facts, MM. Mareska and Donny conclude, that the only means of entirely avoiding the obstruction, and diminishing the loss of potassium, consists in abandoning the idea of effecting the condensation of the potassium vapor in the intermediary tube of Brunner's apparatus, and the substitution (for this receiver which condenses nothing, or which condenses only carburetted potassium) of a receiver in which the vapor solidifies in the metallic state, and in which the metal can, as much as possible, be protected from the alteration which carbonic oxide causes it to undergo. The condensation no longer taking place in the tube, this may be kept, throughout its entire length, at a temperature at which the action of carbonic oxide is impossible.

After having tried a great number of receivers, MM. Mareska and Donny have adopted the following construction, as best answering the purpose required:—

They adapt to the connecting pipe, a kind of elongated and flattened box, open at the two ends, one of which terminates in a round collar, to permit of its being applied to the intermediary or retort pipe. This box is formed of sheet iron of the thickness of four millimetres. Its length is thirty centimetres in the clear.

Amongst the other causes which exert an influence on the progress of the operation, and which have escaped the attention of chemists, MM. Mareska and Donny call attention to the relative quantities of charcoal and carbonate of potash in the mixture from whence the potassium is obtained.

The most suitable proportions, and which occasion no inconveniences during the process, are those indicated by the theory of equivalents. Before proceeding with the extraction of the metal, it is of importance that an analysis of the charcoal of the tartar should be made; and if this is found not to contain the exact quantity of carbon required for the reduction of the metal, white cream of tartar must be mixed with the crude tartar, and the mixture varied until the calcined product obtained, furnishes the required proportions.

The calcination of the bitartrate should be made in vessels quite impermeable, and in which the cooling may be effected without contact of air, in order to avoid the formation of cyanide of potassium, which is also another source of loss.

All who are employed in the manufacture of potassium, know the inconveniences attendant on the employment of clay luting. M. Dumas has decidedly rejected its use.

Notwithstanding the heat necessary for the reduction of the metal is such that, spite of the most minute precautions, an operation is scarcely ever completed without the breakage of the retort, MM. Mareska and Donny have succeeded in avoiding the inconveniences arising from the employment of clay luting, and preventing the destruction of the retorts, by running on them, when they are at a dull red heat, a quantity of borax, sufficient to coat them with a vitrifiable varnish.

By following out in practice the method thus described, MM. Mareska and Donny have succeeded in obtaining a considerable increase in the quantity of metal produced, and have obtained from 150 to 200 grammes of potassium at each operation. They possess a specimen of 400 grammes of pure metal, in pieces of 50 to 60 grammes each; this specimen was the result of three operations.



These gentlemen are now investigating the most efficient modes of purifying this metal;—a metal which has rendered important service to science, and which bids fair to be of still greater value, if efficient means could be devised for obtaining it at a cheaper rate.

In conclusion, they are of opinion that the modifications above suggested in Brunner's process, are not the only ones of which it is susceptible; but they feel convinced that no important improvement can be effected, except by close adherence to the principles above laid down; that is to say, by renouncing the use of spacious receivers,—ceasing to condense the vapors in the retort tube,—and observing closely the precautions above pointed out.—*Annals of Pharmacy*, Feb. 1852.

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#### ACCIDENTAL SUBSTITUTION OF EXTRACT OF BELLADONNA FOR EXTRACT OF DANDELION.—PROSECUTION OF THE MANUFACTURER.

The *New York Journal of Pharmacy*, for November, contains the report of a trial—Samuel Thomas, jr., and Mary Ann Thomas his wife, against Hosea Winchester—in the Court of Appeals. Ruggles, Chief Judge. It appears that the so-called extract of dandelion was manufactured for the defendant by A. Gilbert, whose name appeared on the label, but that by some error in putting up the article, a jar of extract of belladonna was inadvertently substituted for one of dandelion. The defendant sold it to Jas. S. Aspinwall, druggist, New York, who in turn sold it to Dr. Foord, a physician and druggist of Cazenovia, Madison county, who furnished it to plaintiff, for his wife, on the prescription of her physician.

“The defendant, on the trial, insisted that Aspinwall and Foord were guilty of negligence in selling the article in question, for what it was represented to be in the label; and that the suit, if it could be sustained at all, should have been brought against Foord. The Judge charged the jury that if they, or either of them, were guilty of negligence in selling the *belladonna* for *dandelion*, the verdict must be for defendant, and left the question of their negligence to the jury, who found on that point for the plaintiff. If the case really depended on the point thus raised, the ques-



tion was properly left to the jury. But, I think it did not. The defendant, by affixing the label to the jar, represented its contents to be *dandelion*, and to have been "prepared" by his agent, Gilbert. The word "prepared" on the label must be understood to mean that the article was manufactured by him, or that it had passed through some process under his hand, which would give him personal knowledge of its true name and quality. Whether Foord was justified in selling the article upon the faith of the defendant's label, would have been an open question in an action of the plaintiff's against him; and I wish to be understood as giving no opinion on that point. But it seems to me to be clear, that the defendant cannot in this case set up as a defence that Foord sold the contents of the jar as and for what the defendant represented it to be. The label conveyed the idea distinctly to Foord that the contents of the jar was the extract of *dandelion*, and that the defendant knew it to be such. So far as the defendant is concerned, Foord was under no obligation to test the truth of the representation. The charge of the Judge in submitting to the jury the question in relation to the negligence of Foord and Aspinwall, cannot be complained of by the defendant.

Judgment Affirmed.

H. R. SELDIN, *State Reporter*."

The original verdict against Winchester was \$800, the cost of appeal, &c., swelled the amount to near \$1400, which was paid by Winchester.

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#### GROWTH OF CELLS IN PLANTS.

The whole process which is called growth in plants consists, in its essential elements, of a continuous propagation of cells, called secondary or daughter cells, whence the number of cells become multiplied beyond credibility. From an approximate calculation, for example, in a rapidly growing fungus, the *Bovista gigantea*, 20,000 new cells are formed every minute.

## Varieties.

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*On the Inspection of Drugs at the Port of New York,* By DR. J. M. BAILEY,  
Special Examiner.

NEW YORK, September 25, 1852.

MR. GEORGE D. COGGESHALL.

*Dear Sir,*—Your kind and courteous favor of the 16th instant, on behalf of the Publishing Committee of the New York Journal of Pharmacy, asking “information respecting the character of imported drugs and medicines coming under my supervision; and also, information in reference to the general working and effect of the drug law of 1848,” has been before me for several days, waiting such response, in the shape of a full and lengthy communication in detail, as it was my wish to furnish; but pressing and increasing official duties compel me, from want of time (not material,) to forego that pleasure and confine myself to a brief statement of facts and data, which, together with some general observations, I am in hopes may nevertheless, be found interesting to your readers.

As an evidence of the beneficial effects of the wise sanitary measure, in the success of which we have all taken so much interest, I am pleased to say, that the character and quality of the more important articles of drugs, medicines and chemical preparations, connected with medicine at present presented for entry from abroad, is greatly improved, and of a far higher standard of strength and purity than formerly; notwithstanding, as will be seen, I still have occasion to apply the “veto power”—a labor of love, which must, of necessity, be performed in order to arrest the unhallowed strides of deception and fraud which will ever be practised, to a greater or less extent, as long as we have those among us, engaged in any department of the drug trade, who, to put money in their purse, would endanger, if not sacrifice, the lives of their fellow men. The law in question has now been in operation at this port something more than four years; and, with the exception of some eleven months, the duties and responsibilities of its administration have devolved upon me. On the 21st day of April, 1849, I made a report to the New York Academy of Medicine, on the practical operation of this law, and stated therein the more important articles of drugs and medicines, with the quantities annexed, rejected by me up to that date; but as that report is doubtless familiar to most of your readers, I have not deemed it necessary to repeat them here. The following are the more important articles, with the quantities annexed, that I have since rejected and condemned as not of the requisite strength and purity to be safely and properly used for medicinal purposes, viz:—

Senna,	. . . . .	31,838 lbs.
Jalap root	. . . . .	37,121 "
Rhubarb do.	. . . . .	5,782 "
Sarsaparilla,	. . . . .	65,374 "
Mezereon bark,	. . . . .	1,323 "
Opium,	. . . . .	3,164 "
Kino,	. . . . .	230 "
Scammony,	. . . . .	1,483 "
Aloes,	. . . . .	12,375 "
Squills,	. . . . .	1,626 "
Spurious Peruvian bark,	. . . . .	304,135 "
Spanish Saffron,	. . . . .	360 "
Ergot,	. . . . .	475 "
Chamomile flowers,	. . . . .	1,896 "
Assafœtida,	. . . . .	3,700 "
Worm seed,	. . . . .	230 "
Colchicum seed,	. . . . .	2,246 "
Valerian root,	. . . . .	650 "
Guaiacum,	. . . . .	9,300 "
Cream of Tartar,	. . . . .	7,673 "
Magnesia, (carb.)	. . . . .	2,867 "
" (calc'd.)	. . . . .	1,560 "
Althea root,	. . . . .	1,117 "
Liquorice root,	. . . . .	9,430 "
Bistort root,	. . . . .	140 "
Gentian root,	. . . . .	7,572 "
Do. do. in powder,	. . . . .	430 "
Lavender flowers,	. . . . .	3,042 "
Poppy flowers,	. . . . .	190 "
Hellebore root (white,)	. . . . .	460 "
Pareira Brava root,	. . . . .	730 "
Cantharides,	. . . . .	1,276 "
Creosote,	. . . . .	140 ozs.
Bromine,	. . . . .	430 "
Sulphate of Quinine,	. . . . .	3,200 "
Iodine,	. . . . .	6,864 "
Hydriodate of Potass,	. . . . .	3,720 "

Making altogether some five hundred and twenty thousand pounds, to say nothing of various articles in small quantities rejected from time to time, which I have not considered of sufficient importance to note down. This, together with the ninety thousand pounds previously rejected, as stated in an early report above alluded to, makes some six hundred and ten thousand pounds of various articles of drugs and medicines condemned by me as unfit for medicinal purposes since the law took effect at this port. What articles and in what quantities, were rejected during the eleven months

that I was absent from the office, I am not advised, neither am I at this time able to say what has been done under the requirements of this act at the other ports of entry. I hope, however, that the special examiners can give a good account of their stewardship, and that they will not hesitate to do so, whenever the information is desirable as a means of pushing on the column of medical and pharmaceutical reform.

It will be seen by the above statement, that by far the largest quantity of any one article rejected, is that of spurious Peruvian bark, or, as it is generally known in commerce, Carthagena and Maracaibo bark: and that, too, as a general thing, of the poorest and most worthless quality. The best of this bark affords on analysis only an exceedingly small per centage of quinine, not unfrequently but a mere trace; while, at the same time, it yields as high as two, and occasionally, with choice samples, two and a half per cent. of a *peculiar* alkaloid, which has been named *quinidine*, in contradistinction to quinine, cinchonine, and aricine, (the three alkaloids heretofore obtained from the different varieties of the cinchona tribe of plants,) from which it differs essentially in several respects.

What is *quinidine medicinally understood*? How does *sulphate of quinidine compare with sulphate of quinine* (from which it is very difficult to distinguish it by the naked eye, medicinally, as a remedial agent in cases where the use of the latter salt is particularly indicated)? These are important questions, and the subject is one very properly at the present time calling for prompt, patient, and persevering investigation by all those whose mission it is to prepare, dispense or prescribe the most efficient means wherewith to combat disease; the more so for the reason, that I have detected in most of the sulphate of quinine lately imported from abroad, more or less of this non-official, and, (in my opinion) as compared with quinine, non-efficient substance yecept *quinidine*; a fact readily accounted for, when it is known that for the last year or two immense quantities of the bark in question, good, bad and indifferent, have been exported from New Grenada, (as well as much from this port that has been rejected,) and purchased by foreign manufacturing chemists, for the purpose, as I have reason to believe, of mixing it with the *true* bark in the manufacture of the sulphate of quinine; hence the hybrid salt now too frequently presented to entry; a practice that, if not speedily abandoned, will ruin, as far as this country is concerned, the formerly well-deserved reputation of more than one of the foreign manufactures of sulphate of quinia I could name. The argument maintained by some of them, that the article is used in their hospitals and found equal to pure quinine, will not answer on this side of the water; it smacks too much of the almighty dollar, even as I must believe (until further advised) at the expense of truth.

This comparatively inert substance, *quinidine*, is readily detected by using the method adopted by Zimmer, and published in the March number of the *Pharmaceutical Journal*, (London,) and, as I was happy to see, trans-



ferred to the May number of your valuable Journal. It is a test so perfect, so scientifically practical, and so simple withal, that any one possessing only a moderate share of chemical and analytical acumen can successfully apply it, even though perchance he may not be able to boast of wearing the mantle of the departed Berzelius, or of having been a favorite pupil of Liebig.

The law went into operation at this port on the 12th day of July, 1848, and it is worthy of remark, as a cause of gratulation on the part of the early friends of the measure, that the importation of inferior and worthless qualities of many important drugs and medicines, has since gradually and greatly decreased in quantity. For instance, I rejected during the first seven months of the working of the law 19,989 pounds of Rhubarb root; but I have since rejected only 5,782 pounds, being but a fraction over one-third of the quantity. For the past eighteen months, I have not had occasion to reject a single pound. I rejected during the first nine months, 3,347 pounds of opium; but have since, during a period of more than two years and a half of my administration of the law, as will be seen by the above statement, rejected only 3,164 pounds. For the past thirteen months I have rejected only nine hundred and fifty-two pounds, while I have passed during that period not less than 70,000 pounds. During the first two months of the operation of the law, I rejected 1,414 pounds of gamboge, but have since met with that only which I was ready to pass without any hesitation. During the first nine months I rejected 2,977 pounds of gum myrrh, but all that has since been presented to entry at this port, I have found satisfactory. Thus might I continue, but time and space will not permit. Enough I opine, has been said and shown to satisfy even the most prejudiced and sceptical opponent of this wise measure, that if faithfully and judiciously administered *and seconded with becoming zeal and honesty of purpose by the medical profession, the pharmacist and dispensing apothecary*, it is calculated and destined to effect most beneficial and lasting sanitary reforms throughout the length and breadth of our vast and glorious land. In a word, the law has operated thus far remarkably well, considering the hasty manner in which it was framed and passed through Congress. It is in some respects imperfect, as must ever be the case with all new measures of legislation until their utility is tested by practical operation; but these imperfections were, some time since, brought to the attention of the Secretary of the Treasury, who, with his accustomed promptitude, soon after instructed me to report to the Department such modifications and suggestions as my experience in the administration of the law should dictate as most desirable, practicable and judicious; and, notwithstanding this important and responsible trust has necessarily been made the subject of the few occasional leisure moments I could from time to time command, apart from other official duties, it is nearly completed, and, in a manner too, as I have reason to believe, that will render the law, when amended as

proposed, satisfactory to all honorable dealers, importers, owners, and consignees, and, at the same time, do away with the not unreasonable objections entertained by our marine insurance companies; while its efficiency, instead of being in any manner impaired by the amendments, will be more perfectly guarded and essentially strengthened. The particulars and details connected with this duty I must defer to another time; but I must be permitted before closing this communication to say, that to the present able and distinguished head of the Treasury Department, Hon. Thomas Corwin, is due a debt of gratitude, from all true friends of this important measure, not easily cancelled. Soon after he was called to take upon himself the responsibilities of one of the most important, and by far the most arduous offices under the general government, the downward and fatal tendency of a maladministration of the law was brought to his notice; when, rising *above all minor considerations*, he rescued it from impending danger, and placed it upon what he deemed a safe basis; and has since, on all occasions, lent a willing ear to every suggestion calculated to render it more perfect, to add to its efficiency, or perpetuate its usefulness. A noble example truly, and one well worthy of the man.

To conclude, I beg to say, that although I have not the honor of belonging to any Pharmaceutical Association, I nevertheless take great interest in everything calculated to advance the good cause and noble calling in which you have so long been engaged; and I hope the day is not far distant when every city and town of importance throughout this wide extended country, will be favored with an organization of the kind, radiating from a *National Pharmaceutical Association* as a common center. It would be of vast benefit to the community at large, as well as eminently useful to the medical profession; for as all must admit, it is of the most vital importance to the success of the physician, that his remedial agents are properly prepared by a well-bred and perfectly educated chemist and pharmacist; and I may add my conviction, that medical and pharmaceutical chemistry, a part of medical education that has thus far been most unpardonably neglected, should be universally and efficiently taught in our Schools of Medicine.

I am, dear Sir,

Very respectfully, your obd't. serv't.,

M. J. BAILEY, M. D.,

Special Examiner of Drugs, Medicines, Chemical Medicinal Preparations, &c.  
*Proceedings of the National Pharmaceutical Convention.*

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*The Effects of Pulverization on the Properties of Bodies.*—Hitherto, pharmacutists have considered pulverization as simply a change of form in bodies, the particles of the pulverized body being considered as so many divided portions of the entire mass, without having undergone any change of property, but merely one of change of form. M. Dorvault thinks that there are many substances in which the operation of pulverization effects

some actual change in their chemical characters and therapeutical properties. At present he can adduce two or three decided examples, which lead him to form this opinion; these are—common sugar, gum arabic, and arsenic, or arsenious acid. We all know that sugar, when pulverized, becomes less soluble in water, and less sweet to the taste. He asks, Is this to be referred to an altered electrical condition of the sugar, as the phosphorescence developed during the act of pulverization in the dark would lead us to suspect? The next article mentioned, gum arabic, when powdered, has neither the same taste nor the same degree of solubility as when in the entire state; and he states that the effect of pulverization upon white arsenic, or arsenious acid, is so great, as regards its solubility in water, that whilst a given quantity of water may be made to dissolve forty parts in the vitreous state, the same quantity of water can be made to dissolve only fourteen parts after pulverization.—*Annals of Pharmacy*, May, 1852.

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*Electricity.*—Professor Faraday has instituted a series of experiments, with a view to determine the quantity of electricity connected with the atoms or particles of matter. He says, it is wonderful to observe how small a quantity of a compound body is capable of being decomposed by a certain quantity of electricity. “One grain of water will require for decomposition, an electric current equal to a very powerful flash of lightning.” The chemical action of a grain of water upon four grains of zinc, can evolve electricity equal in quantity to that of a powerful thunderstorm; and he states, that from his experiments it would appear, that 800,000 such charges of the Leyden battery would be necessary to supply electricity sufficient to decompose a single grain of water. The Leyden battery of which he speaks consists of fifteen jars, containing 3510 square inches, or about twenty-four and a half square feet of coated glass, charged by thirty turns of a plate electrical machine, the plate being fifty inches in diameter, and of immense power, giving ten or twelve sparks an inch long for each revolution. The author of a paper on this subject in the *Philosophical Magazine*, remarks, that “the estimate that 800,000 discharges of the battery of fifteen jars, equal to a powerful flash of lightning, would be necessary to resolve a single grain of water into its elements, is certainly astounding, when it is recollected that, according to Professor Faraday, the quantity of electricity that decomposes a body, is the equivalent quantity of electricity that had previously held the elements of that body in combination; for he, with Davy and others, conceives that electricity and chemical affinity are identical powers. Hence in one grain, that is, one drop of water, there must be naturally existing, and constituting the affinity between its oxygen and hydrogen, no less a quantity of electricity, than 800,000 charges of a battery containing 3510 square inches of coated glass, or the equivalent of a very powerful flash of lightning. If this quantity of electricity were converted into one spark, it would be 4166 miles in length, taking Professor



Faraday's mean estimate of one charge of his battery as the basis of calculation."—*Ibid.*

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*Artificial Formation of Minerals.*—M. Becquerel has recently made some valuable observations on the artificial formation of minerals by electrochemical action. In detailing his experiments, he states that sulphuret of lead was made to act upon a saturated solution of sulphate of copper and of chloride of sodium, diluted with an equal volume of distilled water, with a view of obtaining compounds of lead, analogous to the compounds of the same metal existing in a natural state. There were found, either upon the pieces of sulphuret of lead, or at the bottom, or in the partitions of the vessels—

1. Chloride of sodium, in cubes, cubic octohedrons, and even octohedrons, of great transparency, and very definite in form.

2. Chloride of lead, in needles and cubes, slightly yellowish, and very perfect in form.

3. Sulphate of lead, in cuneiform octohedrons, precisely resembling in form the crystallized sulphate of lead from Anglesey.

4. Chlorosulphate, in needles.

5. Basic chloride, in microscopic crystals.

6. Sulphuret of copper, black in color, without any appearance of crystallization. In some of the vessels there were formed only chloride and chlorosulphate of lead; in others, chloride and sulphate; which depended, no doubt, upon the proportions of the sulphate of copper and of chloride of sodium, and the density of the solutions. A voltaic couple, formed of a piece of galena surrounded by a platinum wire, placed in a saturated solution of common salt and sulphate of copper, diluted with three volumes of water, gave rise to the formation of a considerable quantity of crystallized chloride of lead, in cubes, without any other product; they were similarly deposited, though a little larger, upon a fragment of malachite which was placed in the solution. He supposes that similar reactions to these may occasionally take place on a large scale throughout nature, causing the natural formation of some minerals.—*Ibid.*

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*Solubility of Common Salt.*—It has been heretofore an established law, that pure chloride of sodium is equally soluble in both hot and cold water. Fehling, who has recently reinvestigated this subject, arrives at the conclusion, that it is more soluble in boiling than in cold water. He finds that one hundred parts of a saturated solution of salt at 54° Fahr. contains 26.423 parts of chloride of sodium, consequently one hundred parts of water will dissolve 35.91 parts of salt at that temperature; and that one hundred parts of a boiling saturated solution of salt contains 28.53 parts of chloride of sodium, therefore one hundred parts of boiling water dissolves 39.92 parts of chloride of sodium.—*Ibid.*, March 1852, from *Annalen der Chemie und Pharmacie*.



*A Test for Alcohol in Essential Oils.*—J. J. BERNOULLI recommends for this purpose acetate of potash. When to an ethereal oil, contaminated with alcohol, dry acetate of potash is added, this salt dissolves in the alcohol, and forms a solution from which the volatile oil separates. If the oil be free from alcohol, this salt remains dry therein.

Wittstein, who speaks highly of this test, has suggested the following method of applying it as the best:—In a dry test tube, about half an inch in diameter, and five or six inches long, put not more than eight grains of powdered dry acetate of potash; then fill the tube two-thirds full with the essential oil to be examined. The contents of the tube must be well stirred with a glass rod, taking care not to allow the salt to rise above the oil; afterwards set aside for a short time. If the salt be found at the bottom of the tube dry, it is evident that the oil contains no spirit. Oftentimes, instead of the dry salt, beneath the oil is found a clear syrupy fluid, which is a solution of the salt in the spirit, with which the oil was mixed. When the oil contains only a little spirit, a small portion of the solid salt will be found under the syrupy solution. Many essential oils frequently contain a trace of water, which does not materially interfere with this test, because, although the acetate of potash becomes moist thereby, it still retains its pulverulent form.

A still more certain result may be obtained by distillation in a water bath. All the essential oils which have a higher boiling point than spirit, remain in the retort, whilst the spirit passes into the receiver with only a trace of the oil, where the alcohol may be recognised by the smell and taste. Should, however, a doubt exist, add to the distillate a little acetate of potash and strong sulphuric acid, and heat the mixture in a test tube to the boiling point, when the characteristic odor of acetic ether will be manifest, if any alcohol be present.—*Ibid.*

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*Saponaceous Cream of Almonds.*—(*Crème d'Amandes amères.*)—The preparation sold under this name is a potash soft soap, made with lard and perfumed with essential oil of almonds. It has a beautiful pearly appearance, and makes an excellent lather with a brush, and has met with an extensive demand as a shaving soap, especially in Paris. It is prepared thus:—Take of fine clarified lard, 7 lbs; of potash ley, containing about 26 per cent. of caustic potash, 3 lbs. 12 oz.; of rectified spirit, 2 oz.; of essential oil of almonds, 2 drachms. Melt the lard in a porcelain vessel, by a salt-water bath or a steam heat under 15 lbs. pressure, then run in the ley *very slowly*, agitating continually from right to left during the whole time; when about half the ley is run in, the mixture begins to curdle; it will, however, finally become so firm and compact that it cannot be stirred, if the operation is successful. The soap is now finished, but is not pearly; it will, however, assume that appearance by long trituration in a mortar, gradually adding the alcohol, in which is previously dissolved the perfume.—*Annals of Pharmacy*, April, 1852.

*Observations on the Different Orange Flower Waters found in Commerce.* By M. LEGUAY.—There are three sorts of orange flower waters found in commerce. The first is distilled from the flowers; the second is made with distilled water and neroli; and the third is distilled from the leaves, the stems, and the young unripe fruit of the orange tree. The first may be easily distinguished by the addition of a few drops of sulphuric acid to some of the water in a tube, a fine rose color is almost immediately produced. The second also gives the same color when it is freshly prepared; but after a certain time, two or three months at the farthest, this color is no longer produced, and the aroma disappears completely. The third is not discolored by the addition of the sulphuric acid; it has scarcely any odor, and that rather an odor of the lemon plant than of orange flowers.—*Ibid*, from *Bulletin de la Société Pharmaceutique d'Indre et Loire*.

*Nitric Acid in Rain Water.*—M. BARRAL has lately found, after very careful and well-conducted experiments, which stretched over more than six months, that the rain water collected at Paris contains appreciable quantities of nitric acid. This discovery has been confirmed by a committee appointed by the Academy of Sciences, and composed of Messrs. Dumas, Boussingault, Gasparin, Regnalt, and Arago. It is supposed that the presence of nitric acid in rain water will explain certain hitherto ill-understood telluric phenomena, and lead to some practical applications. It is due to Dr. Bence Jones, of St. George's Hospital, to say, that he had already pointed out the fact, in the *Philosophical Transactions* of 1851, as to the rain water collected at Kingston (Surrey,) Melburg (Dorset,) the neighborhood of Cork, and in London. Dr. Bence Jones was herein in opposition with Liebig, who has denied that rain water contained appreciable quantities of nitric acid.—*London Lancet*, May 1, 1852.

*Extractum Scillæ Aceticum.* By Mr. F. D. NIBLETT.—Having had frequent complaints from Medical men as to their "inability to preserve the *Pulv. Scillæ* any length of time in a fit state for dispensing," I was induced to turn my attention to the preparation of an article that should supply its place, and be at all times readily dispensed. I have done so in the shape of an *Acetic Extract*, and having introduced it to several gentlemen, who have all spoken highly of it, as possessing all the characteristics of, and decidedly preferable to, the *powder*, with which they have hitherto had so much trouble, I have ventured to forward you the *modus operandi*:

*Extractum Scillæ Aceticum.*

℞ Rad. Scillæ lbj.  
Acid. Acetic. f ʒiij.  
Aq. Distil. Oj.

Digest with a gentle heat for forty-eight hours, express by strong pres-

sure, and *without* straining evaporate to a proper consistence. One grain is about equal to three of the powder.—*Pharm. Jour. September, 1852.*

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*Hospital Sulphate of Quinine.*—Mr. EDWARD HERRING has introduced a preparation under this name, consisting of disulphate of quinine only partially purified. In its medicinal properties it is said to differ but little from the ordinary disulphate. It has a brownish color, and of course is not admissible as a substitute for disulphate of quinine in general dispensing, but it has been tried in hospitals and dispensaries, and by some medical men who dispense their own medicines. The final purification and decolorization of the salt being attended with some expense, the manufacturer is enabled to offer it in a partially purified state at a considerable reduction from the prices at which it can be sold when purified in the usual way. The amount of impurity must be ascertained before its real value can be estimated. It may be a question whether the recognition of a preparation so imperfectly purified might not open the door to some abuse.—*Lond. Pharm. Journ., Nov. 1852.*

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*Felt and Chamois Leather Plasters.*—Messrs. Wright and Ewing have introduced a material which is likely to be valuable to patients requiring plasters for bad sores. It may also be useful for other purposes. It consists of a felt, more soft in its texture than that which is used for hats, and is covered on one or both sides with chamois leather. The plaster is either spread on the leather or on the felt. In either case, it appears to be an application likely to prove serviceable. It may be used for removing pressure from any particular spot, by cutting a hole in the plaster at the part affected.—*Ibid.*

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*On Litmus.* By Dr. J. MÜLLER, apothecary at Berlin.—According to Dr. Müller, the inferior sorts only of litmus contain a mechanical admixture of indigo. Whilst moist, the litmus is introduced into a swing-machine [*Schwungmaschine*] containing finely powdered indigo, and worked until it has assumed an uniform color. But neither Prussian blue nor cobalt is employed.

In the manufacture of litmus all kinds of lichens, even indigenous sorts, are employed; but the best quality is prepared in Holland exclusively from *Roccella tinctoria*. Inferior sorts, however, are made from species of *Variolaria*, *Lecanora*, and *Parmelia*. These are finely ground and placed in contact with nitrogenous substances, especially urine, at a certain temperature. The first product is a red coloring matter, which is formed slowly, if sufficient attention be not paid to the process, and equally high temperature maintained. As soon as this stage has been attained, some potashes are added, not American, Russian or Illyrian, but a German sort, which contains a peculiar constituent and cannot be manufactured in Holland. Upon this constituent, and the addition of Carrara marble, rests chiefly the secret of obtaining a good litmus.—*Ibid*, from *Archiv. de Pharm.*



## Minutes of the College.

STATED MEETING of the Philadelphia College of Pharmacy held at their Hall, Ninth mo. 27th, 1852. Present 19 members.

Daniel B. Smith, President, in the chair.

The minutes of the last meeting were read and adopted.

The minutes of the Board of Trustees were read, by which it appears that Alfred A. B. Durand has been elected a resident member since the last meeting; and that Jackson B. Wood of Richmond, Va., is unanimously recommended by the Board for Associate membership.

On motion the College proceeded to ballot for his election, H. W. Worthington and Wm. J. Jenks acting as tellers. They reported Jackson B. Wood unanimously elected an Associate member.

A communication from Elias Durand, informing that after forty years devoted to pharmaceutical pursuits he had withdrawn from the profession, and tendering his resignation of membership in the College, was read and accepted.

On motion of five members Elias Durand was proposed as a candidate for honorary membership in the College.

The question being taken on a motion to suspend the rules so as to proceed at once to an election, and resulting in the affirmative, the election was proceeded with, whereon Elias Durand was unanimously elected an Honorary member.

The semi-annual election for eight members of the Board of Trustees was held, H. W. Worthington and Wm. J. Jenks acting as tellers. It resulted in the choice of the following Trustees:

Thomas P. James,

Jacob L. Smith,

Alfred B. Taylor,

Dr. J. Harris,

William J. Jenks,

Joseph Trimble,

Charles Bullock,

Henry C. Blair.

DILLWYN PARRISH, *Secretary.*



## Editorial Department.

THE AMERICAN JOURNAL OF PHARMACY.—Our subscribers will perceive that with the twenty fifth volume we commence a new series. For some time past the Publishing Committee have had under consideration the propriety of enlarging the Journal, and have determined in future to issue six numbers annually, instead of four, in January, March, May, July, September and November. The size of the numbers will be the same, and for the present the arrangement of the matter will be similar to that in the last volume. The volume will therefore embrace 576 pages instead of 384 as heretofore. An important improvement will be found in locating the table of contents on the first page of the cover, by which attention is at once attracted to the articles within. The reasons for commencing a new series are these: Three volumes of the old and second series are out of print; the size of the volume will be much enlarged; new subscribers can form a regularly bound set of the third series, whilst the old subscribers can continue the numbering of the volumes as before with the affix "3d series." The greater frequency of publication will be esteemed a decided improvement, by keeping the readers posted up with pharmaceutical information and discoveries.

To meet the increased expense attending these changes the Committee have found it necessary to make the subscription price *three* dollars instead of two dollars and a half. They have also extended the advertising sheet, which now affords a more desirable medium for advertisers, and to which our readers are referred.

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THE AMERICAN PHARMACEUTICAL ASSOCIATION.—In another part of this number a full account of the proceedings of the National Pharmaceutical Convention, will be found, together with a copy of the Constitution and Code of Ethics of the new Association. The enterprise is fairly before the Pharmacentists of the United States, and merits their serious consideration, candid expression, and earnest support. The Colleges of Pharmacy through their Delegates have done well in taking the initiative in this movement, and thus putting the stamp of authority on its birth and infancy, and we trust they will foster it during its early youth, until the stamina of manhood are developed, and its members become strong and firmly knit.

From the nature of the call, the Convention was not numerously attended, and the time proved to be unfavorable for many at a distance who felt a deep interest. Much unanimity and good feeling was manifested during the sittings, and those best qualified to judge arrived at the conclusion, that the Convention, by organizing a national association, and by submitting

some of the leading subjects of general interest to the profession, to the action of Committees, did more wisely, than, by attempting to urge any ultra course of reform, they would have done.

The brief period allotted to the action of committees in a primary convention necessarily deprives them of the deliberation so necessary in the maturing of a constitution and code of ethics. These instruments are therefore manifestly imperfect in some of their details, and not comprehensive enough to embrace many points that materially affect the welfare of the pharmaceutical profession. To adapt them to the real wants of the latter will be the work of future meetings, when larger numbers shall be convened, and the views of pharmacutists at large shall become understood. We have an earnest faith in the ultimate success of the Association and would fain infuse it into our brethren everywhere, until the acts of the American Pharmaceutical Association shall be marked with a dignity and influence that will be felt and respected throughout our widely spread borders.

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COMMITTEES.—The following special Committees were appointed by the Convention, which we bring forward in this connection, that all apothecaries and druggists who have information calculated to promote the objects of their appointment, may be induced to present it.

On the subject of the Inspection of Drugs, *Alfred B. Taylor* of Philadelphia, *John Meakim* of New York, *Joseph Burnett* of Boston and *Dr. David Stewart* (Drug Examiner) of Baltimore.

On the Sale of Poisons as conducted by apothecaries, druggists and others, with the view of suggesting some useful reform, *William Procter, Jr.* of Philadelphia, *Dr. Samuel R. Philbrick* of Boston, *Alexander Duval* of Richmond, and *George D. Coggeshall* of New York.

On the subject of Secret or Quack Medicines, *Daniel B. Smith* of Philadelphia, *Charles A. Smith* of Cincinnati, *Henry F. Fish* of Waterbury, Connecticut.

And on the Resolution relative to Pharmaceutical statistics, the Executive Committee of the Convention, Messrs. Procter, Coggeshall and Burnett.

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MEDICAL EXAMINER VS. FOREIGN QUACKERIES.—The editorial columns of the Medical Examiner for October (1852) embrace an article entitled "Foreign Quackeries and the Drug Inspection Law," in which the writer animadverts on the course of certain gentlemen, who, when asked their opinion as to whether the Drug Law excluded foreign secret medicines, gave it in the negative; and expresses his regret that they should so far forget themselves as to be the means of flooding the land, and poisoning the people with vile foreign quackeries, and extracting from them untold sums of gold in return! The object of the writer, who is anonymous, appears to be to throw obloquy on the College of Pharmacy, because the signers of the document happened to be members of that Institution; and to praise

the Drug Examiner, whose course he considers "honest, manly and consistent," and who has long been unfriendly to the College. The following is the obnoxious document:

"The undersigned are of the opinion that the Law in reference to adulterated drugs, medicines and medicinal preparations, was not designed to exclude secret medicines of foreign manufacture, provided they were made by the party and at the place specified on the label, and that therefore, if the inspector believes that such preparations are what they purport to be, and not spurious, he is bound to pass them.

"At the same time we would have it expressly understood that our private opinions are decidedly adverse to all secret medicines, whether of foreign or domestic origin, and in giving the above opinion we do it entirely in justice to our sense of the intended meaning of the law, and not from a desire to favor the introduction of such medicines."

Now, it is evident that the writer of the article in question does not understand the Drug Law itself, nor is he familiar with its working; and under the influence of excited feeling has endeavored to wound the character of men who have been and are consistent opponents of quackery.

The facts of the case are succinctly these: Mr. Charles D. Knight, well known as the agent for Tilden & Co.'s Extracts, accepted the agency for this city of a foreign secret medicine—agencies for which had previously been established in New York and Boston. Mr. K.'s invoice being delayed, he had been selling the medicines obtained from the N. York agent, for some time, when his own consignment arrived in port. On application to the Drug Examiner, after some delay, he was informed that the *medicines were not safe*, that their composition was not known, and that therefore he refused to pass them! Mr. Knight applied to the Collector, who, not clearly understanding the law, advised him to get the opinion of pharmacutists as to its construction and intentions. The object of getting the opinion, on the part of the importer, was to prevent the delay of reference to the authorities at Washington, and it was given, as a simple matter of justice, without the slightest sympathy for quackery as the document itself will show. The signers were familiar with the law, they knew that various preparations made by secret formulæ were constantly imported under its sanction, some of which were patronized by physicians, and that the very medicines in question had been passed months before by the Inspector at New York, who, perhaps, of all persons connected with the Law is best able to judge of its intentions, having had so prominent an influence in its adoption. (See Amer. Jour. Pharm., vol. XX., page 206.) It turned out after all that the matter was referred to the Secretary of the Treasury, who reversed the judgment of the Examiner.

Now, as to the course pursued by the Inspector, we believe he exceeded his duty as sworn to carry out the Law, and his opinion that the medicines *were not safe*, in the absence of all attempts at analysis, is, to say the least rather arrogant. The law is too lengthy to quote in full, but may be found



at page 292, vol. XX. of this Journal. There is nothing said in it about quack medicines. Section 1st says :

"All drugs", &c. &c, "shall be examined and appraised, as well in reference to their quality, purity, and fitness for medical purposes, as to their value and identity specified in the invoice."

And section 2d :

"That all medicinal preparations, whether chemical or otherwise, usually imported with the name of the manufacturer, shall have the true name of the manufacturer and the place where they are prepared permanently and legibly affixed to each parcel by stamp or otherwise; and all medicinal preparations imported without such names affixed as aforesaid shall be adjudged to be forfeited."

And section 3d :

"That if on examination any drugs, medicines, medicinal preparations, whether chemical or otherwise, including medicinal essential oils, are found in the opinion of the examiner to be so far adulterated or in any manner deteriorated so as to render them inferior in strength and purity to the standard established by the United States, Edinburgh, London, French and German Pharmacopœias and dispensaries, and thereby improper, unsafe, or dangerous to be used for medicinal purposes, a return to that effect shall be made on the invoice, and the articles so noted shall not pass the Custom House, unless," &c.

Now, did the inspector try the medicines in question by the last section ? Did he find them spurious, or deteriorated, or adulterated, any more than the Harlem Oil and German pills and other quackeries, which no doubt he has passed without a question ? No, they were not in the category of examinable drugs in the sense intended by section 3d of the law, but came under the range of patented medicines put up in stamped and labelled packages ; and until the law is altered so as to exclude this class of medicines, by a clearly expressed clause, (and the signers of the certificate would cheerfully advocate it, if it can be constitutionally done,) we believe it will remain the duty of the examiners to pass them.

A consistent and well known course of twenty years should acquit us of harboring any favors for quackery, foreign or domestic ; albeit that we may do an act of justice to the agent of a quack ; and whilst the *personal expediency* of giving the opinion in this instance, in view of the course since pursued by the Inspector in reference to the document, may be questioned, its *justness* cannot be disproved.

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AMERICAN MEDICAL ASSOCIATION VS. COLLEGES OF DENTISTRY AND PHARMACY.—We have received a copy of the report of the committee on amendments to the Constitution, etc. of the American Medical Association, to which the resolution of Prof. George B. Wood was referred, which is as follows :

"Resolved, That colleges exclusively of dentistry and pharmacy are not recognised, by this Association, as among the bodies authorised to send delegates to its meetings."

The question for the committee to decide was, whether the constitution of the association was so worded as to open the door of admission to delegates from dental and pharmaceutical colleges, and they arrive at the conclu-



sion that it does not admit them either by its letter or spirit, and we think very properly. The interests of physicians and pharmacutists are sufficiently distinct to make it good policy to avoid any professional amalgamation.

This question arose from the fact that at the meeting of the Association at Charleston, in 1851, a delegate from the New York College of Pharmacy presented himself, who being a graduate of medicine was admitted by courtesy, at the same time the right of the society delegating him was denied. The whole affair arose out of a misunderstanding of the proper mode of proceeding by the New York College of Pharmacy, who, in sending Dr. Guthrie, had no wish to interfere with the right of the association or break in on its order, Dr. G. going there solely to call the attention of the Association to the subject of the drug inspection law; and if he had appeared in that capacity there is no doubt that his mission would have received more attention from the Association. We are glad that Dr. Guthrie's claims were disputed, because the subject, being thrown back on the N. Y. College of Pharmacy, that institution issued a call for a Pharmaceutical Convention in reference to the drug law, out of which has grown the primary organization of the American Pharmaceutical Association.

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AUGMENTATION OF PHARMACEUTISTS IN PARIS.—In 1776 there existed about one hundred shops, in 1845 the number had increased to three hundred and fifty-two, and at this time their number is three hundred and ninety-three. The herborists of 1776 numbered 126; at present nearly 450.

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APOTHECARIES VIALS FOR PRESCRIPTION USE.—Prof. W. E. Horner has called our attention to a defect in the construction of vials, that has long been known and suffered, and which calls loudly for a remedy. We allude to the practice of making vials with very narrow, thick lips, so as to render it next to impossible to drop medicines from them, when more than half full. This is particularly true of the half ounce and ounce vials. When one attempts to use them the liquid passes from the lip to the neck of the vial, and either runs down along the side, or falls in drops of too large a size. If druggists and apothecaries would urge a reform in this matter by the manufacturer, they would greatly abridge the trouble and risk of administering a very numerous class of medicines.

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ANSWERS TO CORRESPONDENTS.—*Tetramethylammoniumiodid*, is the German mode of expressing the name of the compound formed when iodide of methyle ( $C_2 H_5, I$ ) is added to trimethylamine ( $C_6 H_9, N$ ). Trimethylamine is an artificial organic base obtained from herring pickle, in which each equivalent of the hydrogen of ammonia is replaced by an equivalent of methyle ( $C_2 H_3$ ) according to the law of substitutions.

*Tinctura Rhei Dulcis* is made by the following formula, viz: Rhubarb

bruised,  $\xi$ viii, Liquorice root bruised,  $\xi$ ijj, Anise seed bruised,  $\xi$ ijj, Cardamom seed bruised,  $\xi$ iv, Orange peel bruised,  $\xi$ j, Diluted alcohol a sufficient quantity to make a gallon of tincture by maceration and displacement.

*Antidyne* is a substitute for Granville's lotion, suggested by Mr. George Mellor, apothecary of this city, who considers the formula strictly private.

It is said to differ from Granville's lotion in not producing vesication.

*Unguentum Elemi Compositum*, is the old name for Unguentum Elemi, as employed in the London Pharmacopœia of 1824. On the revision of that work in 1836, the terminal adjective was omitted. We presume the old name is employed only by old practitioners, or by those of recent date whose books of reference are antiquated.

A correspondent asks, "Is a physician justifiable in writing a prescription for a preparation not recognized by our Pharmacopœia without giving a formula for it?" and says, "It often happens that a patient has to travel over half the city (or get his apothecary to do so for him) to find one article in a prescription, unless he happens to stumble upon *the particular shop* in which alone the article is kept." In many instances physicians *are* justifiable in prescribing beyond our Pharmacopœia without giving authorities, because a very considerable number of non-official medicines are kept in our shops; yet it is much safer for their patients, and convenient for the apothecary to have some indication of the authority on the prescription, as (Lond. Ph.) (Paris Codex) "Dunglison's New Remedies," "Ellis' Formula," etc. If it is a new preparation introduced by some particular apothecary which the Physician desires to try, let him write the name of the apothecary, on the prescription. This may often happen without the slightest impropriety on the part of either physician or apothecary, when no secrecy is observed by the latter in reference to the composition of the preparation, and the patient or his apothecary may get supplied with it on demand. Every apothecary has a just right to be remunerated for his skill. It is quite different, however, when there is collusion between physician and apothecary, by the use of hieroglyphics by the former, or secret formulæ by the latter. The Code of Ethics of the Philadelphia College of Pharmacy and the joint Report of the County Medical Society and Philadelphia College of Pharmacy, published a year ago in this Journal, set this matter in a clear light.

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*Materia Medica or Pharmacology and Therapeutics.* By WILLIAM TULLY, M. D. Vol. I., No. 1, Nov. 1852; pp. 64. Springfield, Mass.

For some months past it has been announced through several of the medical journals that Dr. Tully, of Springfield, Mass., and formerly of New Haven, was about to publish a work on *Materia Medica and Therapeutics*. The work is to be published in monthly numbers of 64 pages, at twenty-five cents each, and will probably extend to twenty. Dr. Tully is spoken of as a gentleman qualified, by long experience, and extensive reading and

observation, for the task which he proposes to accomplish, viz: to write a work that, in the language of the *prospectus*, "will be original, having none of the characteristics of a compilation. The field he has explored, the objects he has sought, and the manner of pursuing his inquiries, have been quite different from ordinary writers. His classification differs materially, and is founded upon different principles from any that has preceded it, and will commend itself to any one who will examine it critically and with a view to its practical tendency. It will therefore be a new system essentially, and may justly be entitled a revision of the *Materia Medica*." Originality is often very desirable in a writer; on the subject of *Materia Medica*, however, which is made up of the accumulated observations of centuries, it is highly important that all well ascertained facts, by whomsoever observed, should be duly registered, so as to present a correct view of the present state of the science; and on the score of nomenclature, where a well understood system has been generally adopted by writers, or in a country where a respectable pharmacopœia exists, originality of nomenclatural language is not only an inconvenience, but a positive evil, as leading to confusion of ideas. In looking over the first number of Dr. Tully's work, we are struck with many novelties in names, as *Chlorohydrargyrous acid* and *Dichlorid* of mercury, for calomel; *Disoxyd*, for black oxide of mercury; *Proto* nitrate of silver; *Hydrile* of *Potassa* for the hydrate; *Cyanid* of *hydrogen* for hydrocyanic acid; *Chlorite* for *chlorate* of potassa, &c. As the number before us is almost wholly devoted to the *modus operandi* of medicines, a subject to be discussed more appropriately by medical journalists, we will defer a critical notice of the work until it has progressed further, hoping that the author in the part of his book devoted to *materia medica* and the preparations, will not depart so far from the generally received nomenclature as the few instances, in the present number, where he has had to employ the names of medicines, lead us to think he intends. In discussing the operation of medicines on the system, it is evident that Dr. Tully has thought much and experimented much. The style of the author is peculiar, and his language exhibits many words peculiar to his pages. The typography is good, and the paper and general getting-up creditable to the publishers. We shall look with interest for the coming numbers, and in accordance with the wishes of the publishers, will *exchange* with pleasure.

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*A Memoir on the Life and Character of* JAMES B. ROGERS, M. D., *Professor of Chemistry in the University of Pennsylvania.* By JOSEPH CARSON, M. D. October, 1852.

Dr. Carson has acquitted himself well in the preparation of this modest and truthful memento of the life and character of his lamented colleague.

The subject of this memoir was born in the city of Philadelphia, February 22d, 1803. His father, Dr. Patrick Kerr Rogers, emigrated to this

country from the north of Ireland in 1791, and, after several years spent in literary engagements, he graduated in the medical department of the University of Pennsylvania in 1802. Dr. Rogers died in 1828, at Williamsburg, Virginia, whilst in occupancy of the Professorship of Natural Philosophy and Chemistry, in William and Mary College, which he had filled since 1819, leaving four sons, all of whom have distinguished themselves as teachers of science.

Dr. James B. Rogers graduated at the University of Maryland in 1822, and after practising medicine in Harford County, a few miles from Baltimore, for a few years, he returned to that city with the view of relinquishing the practice of his profession, and soon after engaged as the scientific superintendent of the chemical works of Messrs. Tyson and Ellicott, an occupation more in harmony with his tastes and wishes. He subsequently left this post to accept the chair of Chemistry in the Washington Medical College, at Baltimore, in which he laid the foundation of his reputation as a teacher of his favorite science. In 1830 Dr. Rogers married Rachel Smith, of Baltimore, who with two sons and a daughter survive him. In 1835, when the Cincinnati College was organized by Dr. Drake, the services of Dr. Rogers were solicited for the chemical department, a situation which he honorably filled for four years. During this time he assisted his brother William in the geological survey of Virginia, and subsequently his brother Henry in that of the State of Pennsylvania. In 1839 he removed to Philadelphia, where he continued to reside, a part of the time under those depressing difficulties that too often beset the deserving votary of science. As a lecturer in the Philadelphia Medical Institute, the Franklin Institute, and the Franklin Medical College, he occupied parts of the time till 1847, when at last a fitting field for the exertion of his talents was afforded him, by his appointment to the Professorship of Chemistry in the University of Pennsylvania, rendered vacant by the resignation of Professor Hare. His happy efforts as a teacher in this scene of his last labors are familiar to very many; and his lucid exposition of the difficulties of his science, and the apt illustration both by language and experiment which marked his discourses, have gained for the chemical chair of the University a scientific reputation, second to none in our country. His constitution, never robust, was shattered whilst engaged in the deleterious atmosphere of the manufacturing laboratory; for several years before his death his physical powers gave evidence of gradual decay, until on the 15th of June, 1852, he finally succumbed to a protracted attack of albuminaria, attended by much suffering.

It was our good fortune to have known Prof. Rogers during the latter years of his life, and to be profited by his instruction as a teacher, and his advice as a friend. Ever ready to communicate knowledge, he took equal pleasure in helping the student over the roughnesses of his journey, or in lending his compeers the aid of his knowledge and skill.



*Transactions of the Medical Society of the State of Pennsylvania at its Annual Session, held in Philadelphia, May, 1852.* Vol. II. Published by the Society. pp. 146, octavo. Philadelphia, 1852.

*Transactions of the Medical Association of the State of Missouri at its Second Annual Meeting, St. Louis, April 19th, 20th, 21st, 1852.* Vol. II. pp. 116. St. Louis. 1852.

*Transactions of the Annual Meeting of the Medical Society of the State of Georgia, held in the City of Augusta, April, 1852.*

The publications above noted, with others of the same nature, are results of the general organization of the medical profession in the United States, reacting on the local societies, exciting in them an interest not before observed, and producing a series of observations or medical statistics, the local peculiarities of disease, the topography of the counties, and much other information interesting to the medical profession. We hope like effects may result from the organization of pharmacutists which is just commencing. A spark of the proper spirit has been elicited from New England, (see page 22,) and we trust other sections will not be wanting in regard for the cause of reform.

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JEAN JOSEPH WELTER, the inventor of the instrument called "Welter's Safety Tube," and of other useful chemical apparatus, died on the 8th of July, at Paris, in the 89th year of his age. He was the friend and co-laborer of Gay Lussac, and a corresponding member of the Chemical Section of the French Institute.

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DR. THOMAS THOMSON, Regius Professor of Chemistry in the University of Glasgow, died on the 2d of July, at the age of seventy-nine.

Dr. Thomson was the youngest son of John Thomson of Crieff, (Scotland.) He received a thorough classical education at the University of St. Andrews. In his twenty-third year a taste for chemical science was awakened by his attendance on the lectures of the celebrated Dr. Black, and about five years after, in 1800, he commenced lecturing on chemistry, which he continued during forty-six years. His system of chemistry first appeared as a separate work in 1802, having previously been published in the *Encyclopedia Britannica*. He has the reputation of having first used symbols to express chemical composition, and was one of the earliest supporters of Dalton's Atomic Theory. He lectured in Edinburgh till 1811, conducted the "*Annals of Philosophy*" at London from 1813 to 1822, and lectured in the University of Glasgow from 1817 to 1846. He is the author of various works, and among them a *History of Chemistry*, a *History of the Royal Society*, and *Outlines of Mineralogy and Geology*. Dr. Thomson married in 1816, left a son, Dr. T. Thomson, of the Bengal army, and a daughter married to his nephew and successor, Prof. R. D. Thomson.

M. Dizé, the celebrated co-discoverer of the process for artificial sal sodæ, died in August last, in the 88th year of his age. He was born at Aire, in the department of Landes, in 1764. He went to Paris at an early age with a letter to M. Darcet, and became, some time after, his chief laboratory assistant. For twenty years his name was associated with that of Dublanc in the preparation of artificial soda, a discovery from which France now receives a revenue of twenty millions of francs, and the world a benefit not appreciated in its vast extent. M. Dizé organized the Ecole Militaire, and the Pharmacie Centrale des Armées, during the revolution. He discovered new processes for refining the precious metals, and ceased not until his death to take a lively interest in the progress of the sciences. He was a member of the National Academy of Medicine and of the Société d'encouragement. M. Boudet has recently published a long memoir in the *Journal de Pharmacie*, (Aout 1852,) in which he has done full justice to the claims of M. Dizé as a discoverer.

### CLASS OF THE PHILADELPHIA COLLEGE OF PHARMACY, FOR THE SESSION OF 1852-53.

*With a List of the Preceptors and of the Localities from whence the Students come.*

MATRICULANTS.	PRECEPTORS.	TOWN OR COUNTY.	STATE.
Bachman, Alexander,	Dr. George Bley, Jr.	Philadelphia,	Pennsylvania.
Barclay, James S.	W. W. & H. Smith,	Logan Co.	Kentucky.
Barr, Thomas H.	Edward Parrish,	Terre Haute,	Indiana.
Bancroft, Joseph W.	John Gilbert & Co.	Philadelphia,	Pennsylvania.
Bannvart, Charles A.	Alfred B. Taylor,		France.
Bickley, Mortimer H.	Dr. J. M. Allen,	Delaware Co.	Pennsylvania.
Bley, John,	John Bley,	Philadelphia,	"
Bond, Samuel S.	A. B. Jardella,	Delaware Co.	"
Bonsall, Charles T.	Bullock & Crenshaw,	Trenton,	New Jersey.
Bassett, William H.	Chas. Ellis & Co.	Wilmington,	Delaware.
Bower, Henry,	G. W. Carpenter & Co.	Philadelphia,	Pennsylvania.
Broughton, John,	Bullock & Crenshaw,	Norfolk,	Virginia.
Buddy, John L.	Linn, Smith & Co.	Philadelphia,	Pennsylvania.
Caldwell, S. W., Jr.	A. H. Yarnall,	"	"
Chenoweth, John T.	Chas. S. Rand,	Cincinnati,	Ohio.
Cheston, Elijah, Jr.	Ambrose Smith,	Bucks Co.	Pennsylvania.
Chapin, William C.	Chas. Ellis & Co.	Philadelphia,	"
Clark, Thomas M.	Wetherill & Brother,	Gloucester Co.	New Jersey.
Conyers, James R.	T. Morris Perot,	Philadelphia,	Pennsylvania.
Corbett, John,		"	"
Cox, Richard S.	Robert C. Brodie,	Broome Co.	New York.
Crooks, Herman H.	John Goodyear,	Philadelphia,	Pennsylvania.
Cummings, Wm. T.	Harris, Hale & Co.	West Philadelphia,	"
Cope, Oliver,	French & Richards,	Philadelphia,	"
Davis, John W.	Wetherill & Brother,	"	"
Dame, John E.	Wm. Hodgson, Jr.	Poughkeepsie,	New York.
Dillard, Robert K.	Dillwyn Parrish,		Alabama.
Downs, Michael J.	Harris, Hale & Co.	Philadelphia,	Pennsylvania.
Eggert, Charles H.	Frederick, L. John,	Bethlehem,	"
Faunce, John H.	Linn, Smith & Co.	Philadelphia Co.	"

Gahan, Edward,	George W. Nebinger,	Dublin,	Ireland.
Gaillard, Edward,	Alfred Tatem,	Philadelphia,	Pennsylvania.
Gerhart, Samuel,	Dr. Geo. Bley, Jr.	"	"
Gordon, James E.	John Bringham,	"	"
Gray, Albert,	Wm. B. Smith,	"	"
Griffith, J. Clarkson,	B. J. & J. L. Crew,	Frederick Co.	Virginia.
Gutekunst, Frederick,	Wm. M. Powell,	Germantown,	Pennsylvania.
Guthrie, J. T., Jr.	Harris, Hale & Co.	Philadelphia,	"
Hamilton, John B.	Beates, Baker & Co.	Franklin Co.	"
Hance, Edw. H.	John Gilbert & Co.	Philadelphia,	"
Harper, David,	Daniel S. Jones,	Cumberland Co.	"
Harres, J. Henry,	Dr. W. R. Blakeslee,	Philadelphia,	"
Harris, Levi H.	Geo. W. Vaughan,		Maryland.
Hester, Jacob,	Robert Shoemaker,	Trenton,	New Jersey.
Hinson, Jacob M.	Daniel L. Wecherley,	Philadelphia,	Pennsylvania.
Hooper, John H.	Dr. Chamberlaine,	Cambridge,	Maryland.
Jacoby, D. S.	Breinig & Fronefield,	Montgomery Co.	Pennsylvania.
Jenks, J. Ridgway,	Jenks & Ogden,	Bucks Co.	"
Kennard, Joseph M.	A. W. Parsons,	Wilmington,	Delaware.
Kollock, M. Henry,	Fred. Brown,	Cumberland Co.	New Jersey.
Lancaster, Thomas,	Samuel Simes,	Falls of Schuylkill,	Pennsylvania.
Lemberger, Joseph L.	Dr. J. P. Fitler,	East Hanover,	"
Leuchsenring, H.	Bullock & Crenshaw,	Havana,	Cuba.
Loser, John C.	A. Wiltberger,	Lancaster Co.	Pennsylvania.
Markley, George H.	P. Williamson & Son,	"	"
Merritt, Alfred C.	Browning & Brothers,	Salem,	New Jersey.
Meyers, Edward T.	Edward B. Garrigues,	Columbia,	Pennsylvania.
Miller, William J.	Fred. Klett & Co.	Philadelphia,	"
Mitchell, Alex. H.	Joseph H. Brooks,	Kensington,	"
Morgan, David U.	French & Richards,	Philadelphia,	"
Ogden, Edward H.	Jenks & Ogden,	"	"
Palethorp, John H. Jr.	Thomas P. James,	"	"
Pedrick, Charles W.	Joseph A. M'Makin,	Portsmouth,	Virginia.
Pollard, Oscar,	Bullock & Crenshaw,	Philadelphia,	Pennsylvania.
Pyle, J. Lindley,	Henry C. Blair,	Chester Co.	"
Richard, Adolph,	Dr. Yoche,	Wilkesbarre,	"
Robinson, Edward T.	Bullock & Crenshaw,	Richmond,	Virginia.
Ruch, John H.	Wetherill & Brother,	Pottsville,	Pennsylvania.
Savery, Wm. Jr.	Charles Ellis & Co.	Philadelphia,	"
Sharswood, James,	Harris, Hale & Co.	"	"
Sheaff, John T.	Sam. F. Troth & Co.	Delaware Co.	"
Shrom, Charles F.	Caleb R. Keeney,	Carlisle,	"
Southall, Turner H.		Norfolk,	Virginia.
Steever, Henry C.	Frederick Brown,	Philadelphia,	Pennsylvania.
Stevens, Hennell,	Jos. A. McMakin,	Germantown,	"
Stoeckel, George W.	Thomas E. Pryor,	Philadelphia,	"
Taylor, Samuel,	Smith, Pemberton & Co.		England.
Test, Alfred W.	Richard W. Test,	Camden,	New Jersey.
Thomas, Edwin L.	N. Spencer Thomas,	Philadelphia,	Pennsylvania.
Thomas, Hugh M.	"	"	"
Thomson, William H.	Charles Shivers,	"	"
Uhler, Harry N.	Dr. George Uhler,	"	"
Warder, Wm. Henry,	Paul G. Oliver,	Logan Co.	Kentucky.
Watson, William J.	Wm. Procter, Jr.	Philadelphia,	Pennsylvania.
Walsh, Thomas,	Edward Donnelly,	"	"
Whitcar, Wm. R.	J. W. Simes & Son,	"	"
Willits, Charles H.	Wetherill & Brother,	Burlington,	New Jersey.
Wolf, Wm. H.	Fahnestock & Co.	Philadelphia,	Pennsylvania.
Wyeth, John,	Henry C. Blair,	Harrisburg,	"

THE  
AMERICAN JOURNAL OF PHARMACY.

MARCH 1853.

REMARKS ON THE SYRUP AND SOLUTION OF SESQUI-NITRATE  
OF IRON.

By JOSEPH LAIDLEY, Richmond, Va.

*Solutions and syrups of nitrates of Iron.*

A nitric solution intended to be of the *sesqui*-oxide of iron was proposed as a remedial agent, by Mr. Kerr of Scotland, in 1832.\*

His formula was modified and a syrup proposed, in 1846, by the late Mr. Augustine Duhamel.†

With a slight variation in Mr. Kerr's formula for the solution, it was introduced into the last edition of the U. S. Pharmacopœia, but the preparations afforded by these formulæ are all liable to one great objection, want of permanence; the cause of which was exhibited, a remedy indicated, and another ferruginous preparation proposed by Professor Procter, in vol. xxiii. pp. 312, 15, of this Journal.‡ As the formulæ there suggested meet the former difficulty, affording preparations that keep unimpaired, for apparently any length of time, it is unnecessary now to dwell longer upon them. My object at present is to call attention to an important fact in reference to the syrup of ternitrate of iron, namely, the formation of *oxalic acid* therein.

Ever since the appearance of Mr. Duhamel's paper, above referred to, "syrup of pernitrated iron" has been a favorite remedy with many of our practitioners; consequently, it became the duty of the pharmacist to furnish the medicine if possible; but knowing that it would not keep for any length of time, and wishing to supply several inquirers for it with a permanent and efficient syrup of this salt, as soon as Professor Procter's formula for the

\* Journal Philada. Coll. Pharmacy, vol. iv. p. 169.

† Am. Jour. Pharmacy, vol. xvii. p. 92.

‡ Several specimens of these preparations now in my possession are fifteen months old, and except a very small deposit in some of the solution of pernitrated iron, no change whatever is perceptible.



solution was published I prepared some of it strictly in accordance with his directions, making it, however, of double the official strength; a portion of this was diluted with an equal volume of distilled water to form the "*liquor ferri nitratis*," and the other portion was converted into a syrup by the following formula:

Take of double strength solution of ter-sesqui-nitrate of iron, 8 fluid ounces,  
 White sugar, 14 ounces, (Troy.)  
 Distilled water, a sufficient quantity.

Dissolve the sugar in the ferruginous solution, with the aid of a gentle heat, adding, when cold, sufficient water to make the syrup measure one pint. As thus prepared, it is of a fine reddish brown color, possessing the characteristics of the "solution," and being of the same strength as the Pharmacopœial preparation. To test its stability, several 2 ounce vials were filled with the syrup, securely corked, and placed in situations of dissimilar temperatures; in about a week the cork of one in a warmer situation was expelled; a second soon followed; and one vial, the cork of which was secured with twine, exploded with considerable violence. Similar results attended those in the cool situation, a little longer time elapsing before the action was observable. After standing some time the preparation was again examined, with the following result: it possessed a ferruginous taste, was devoid of astringency, had lost almost entirely the sweet taste, and at the bottom was a light yellow or orange colored precipitate; this was insoluble in water, was washed, and, with the view of determining whether it was an *oxalate*, the following tests were employed, namely:—

- a. The precipitate was dissolved in diluted hydro-chloric acid; the excess of acid neutralized with ammonia water, the addition of which precipitated some of the peroxide of iron, which was separated by filtration, and to the clear liquid was added some
- b. solution of chloride of calcium, occasioning a copious white precipitate, soluble in nitric acid.
- c. To other portions of the liquid (a) were added lime-water, and solution of gypsum, each of which occasioned a white precipitate soluble in nitric acid, showing the probable presence of *oxalic acid*. To confirm it, some of the original precipitate was
- d. dissolved in diluted nitric acid, ammonia water added, filtered &c., as with (a), in which solutions of chloride of calcium pro-

duced a white precipitate; sulphate of copper a blueish white, and nitrate of silver a dense white precipitate, which were all soluble in nitric acid. These experiments prove that the precipitated matter found in the vials was *oxalate* of iron; a result not at all surprising, when we reflect that the solution of *terresqui-nitrate* of iron, as suggested by Prof. Procter, contains, in order to preserve it, a small excess of acid, which in the syrup reacts with the sugar and forms saccharic and oxalic acids, and nitric oxide: the first two unite with the *sesqui-oxide* of iron, forming *saccharate* and *oxalate* of that metal; the nitric oxide being set free occasions the expulsion of the corks and bursting of the vials, already referred to.

Some syrup of the *proto-nitrate* of iron prepared by Prof. Procter's formula at the same time that the preparations of the *sesqui-salt* were made, continue unaltered and perfectly good up to this time.

The conclusions then to be drawn from these facts are, that the *syrup* of *sesqui-nitrate* of iron, although in many localities an oft prescribed remedy, is an unscientific and ineligible preparation; for, without an excess of acid, it is a mixture of *proto* and *per nitrate*, and with that excess the acid generates oxalic acid. It is a superfluous and unnecessary preparation, for as the simple solution prepared by Prof. Procter's formula keeps perfectly well, there can be nothing gained by adding sugar to the medicine, the dose of which is so small that it cannot sensibly improve the flavor, and as the iron salt is already *per oxidized*; sugar is of no use for preventing what would not occur—the further absorption of oxygen from the atmosphere.

When a syrup of nitrate of iron is wanted, the *proto-nitrate* should be employed; in it there is no excess of acid to act on the sugar, which is employed to prevent peroxidation of the iron, and it is not only permanent but pleasant to the palate.

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#### NOTE ON ADULTERATED POWDERED SOCOTRINE ALOES.

By WILLIAM PROCTER, JR.

Having been recently called upon to examine two specimens of aloes in reference to their purity, it has been thought that a few remarks relative to the result will not be without use.

Specimen A presents the form of masses of a conglomerated powder, of coarse texture, with numerous minute woody-fibres disseminated through it, and visible to the naked eye. When breathed upon, it exhales the odor of true socotrine aloes; it gives a yellowish-brown slightly greenish colored powder, very gritty under the spatula, and evidently consists of that variety of aloes, admixed with other matter, partly ligneous, and partly inorganic.

Specimen B is a mass and fragments, rendered friable by a thorough dessication, effected with a view to powdering, and readily breaks up when handled. Its color in mass is reddish brown, modified by the fissures on its surface; possesses the odor of true socotrine aloes, and affords a deep orange yellow powder when recently triturated.

The specimen A is part of a lot of about 1000 pounds sent to a Western druggist from New York, and refused on the ground of its not being of good quality. The druggist in New York asserts that the aloes was pure when sent to be powdered, as a retained sample, which was submitted to an analytical chemist in that city, was pronounced to be of good quality.

The specimen B was a sample of a lot of aloes powdered and sent to the same Western druggist by another party, and which proved satisfactory.

In the following statement relative to the treatment of 100 grains of each specimen, it must be understood that each result was obtained from a separate quantity, and not from the same portion.

#### *Specimen A.*

100 grs. contained 42 grains, insoluble in cold water.

100 " " 33 grs., insoluble in boiling water.

100 " " 10 grs. apotheme or altered aloecin, deposited from the solution in boiling water by cooling.

100 " yielded 13 grs. of incombustible ash when incinerated in a platina crucible.

33 grs. of residue insoluble in } 12 grs. of incombustible ash by  
boiling water yielded. } incineration.

100 grains yielded 37 grs. insoluble in alcohol 35° Baumé.

#### *Specimen B.*

100 grs. contained 33 grs., insoluble in cold water.

100 grs. " 20 grs., insoluble in boiling water.

100 grs. " 12 grs. apotheme or altered aloecin.



100 grs. yielded 6-10ths gr. incombustible ash by incineration.

20 grs. of residue insoluble }  $\frac{1}{2}$  gr. of incombustible ash by in-  
in boiling water, yielded } cineration.

100 grs. yielded  $2\frac{1}{2}$  grs. of matter insoluble in alcohol  $35^{\circ}$  B.

The residue of A, insoluble in cold water when examined with a lens, exhibited shreds of woody-fibre, shining gritty particles, and dried pulpy matter in fragments.

The residue of B, insoluble in cold water, had a resinous kino-like look, and consisted of 20 parts of resin and 13 of apotheme.

The large percentage of inorganic matter in A, does not belong to fair commercial aloes, and it is difficult to account for such an adulteration in view of the less ready detection of cheap aloes. The uniform manner in which the woody-fibre is distributed through the specimen A, leads to the supposition that some vegetable powder was introduced with a view to prevent the conglomeration of the aloes; and the large residue insoluble in alcohol is additional evidence of the impurity of the specimen A. Whether the original aloes was very inferior, and contained both woody and earthy matter, or whether designedly adulterated, it is, of course, impossible to determine by analysis.

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#### PROXIMATIVE ANALYSIS OF A CONCRETION OF HAIRS FOUND IN THE ESOPHAGUS OF A SLAUGHTERED OX.

By JOHN T. PLUMMER, M. D., Richmond, Indiana.

I do not know that any chemical examination has heretofore been made of the hair balls so often found in the stomachs of ruminant animals. According to Youatt, those that are found in cattle are generally devoid of any distinct central body; but sometimes a bit of straw, wood, stone, iron or shell forms a nucleus. The concretions mostly exist in the first and second stomachs; but hard masses of hairs are sometimes obtained from the half-fluid contents of the fourth stomach. In the paunch, the balls consist in part of food and earthy matter; but in the second stomach, to all appearances, they are composed exclusively of hair. The concretions vary in size, and are found at a very early age of the animal. It is said that a ball "as large as two fists" was found in the rumen (first stomach) of a calf only five weeks old. By the



superstitious, they are called witch-balls; but their origin is sufficiently obvious to the intelligent observer.

The concretion in question, after being dried at a temperature of about  $70^{\circ}$  for several weeks, weighed but 209 grs. It had no taste nor smell, except a very faint cow-house odor; and apparently consisted altogether of hairs, loosely felted together.

On subjecting it to the action of water at the temperature of  $40^{\circ}$  only, I obtained a brown liquid, which was neutral to test papers, and produced no precipitate by boiling. Acids caused a precipitate which was immediately dissolved by the excess of the reagent. The brown liquid acidulated by exceedingly dilute HCl yielded a white precipitate to Cfy + 2K.

These, and other reactions indicated the existence of *Casein*.

The residue of the concretion was treated with a fresh supply of water at  $135^{\circ}$  for one or two hours. The filtrate was much paler than that of the first maceration; and yielded the same results, but in a less degree.

The washed residue presented to the eye a mass of yellowish brown hairs, and of light brown, irregular formed concretions of various sizes. The hairs were carefully removed, and a portion of the residue rubbed between the fingers imparted an unctuous or soap-stone feeling. A small quantity stirred in alcohol, readily separated; and when placed under the microscope, appeared to be wholly *epithelial scales*; they burnt like horn, and evolved a similar odor.

Treating the epithelium with alcohol (.810) and evaporating the filtrate, which was of a rich golden yellow, I obtained a watery looking fluid; and separated from it an orange red mushy matter.

The limpid fluid promptly reddened litmus, and evaporated at less than  $50^{\circ}$  so rapidly as to appear to effervesce. An ethereal filtrate furnished a corresponding result. The scantiness of my material allowed me no opportunity to examine it further, except that it left no grease spot upon paper. I set it down as *Butyric Acid*.

The orange red portion heated beyond  $212^{\circ}$ , gives out a strong cow-house odor; and evaporates with a smoky vapor, leaving a slight residue. It has no acid reaction, leaves a greasy stain when warmed on paper, and is not saponifiable in a solution of potash, at boiling heat. From the alcoholic solution, bichloride of mercury and diacetate of lead precipitate beautiful white crystalline

plates, which became richly red in a drop of concentrated  $\text{SO}_3$ ; thus clearly characterising the presence of *Cholesterin*.

Of the *Yellow Oil* there was not a sufficient quantity to experiment upon satisfactorily. The hair dried weighed 20 grs. Under the microscope the filaments appeared perfect, and the pith of the larger ones distinct. Hence the hair did not undergo the digestive process; indeed I am not aware that any form of keratine is susceptible of digestion.

On drying the epithelium from the alcoholic maceration, at nearly scorching heat of paper, the room was filled with the strong cow-house odor.

Thus we have in the original concretion :

Hair	20 grs.
Epithelium	112 grs.
Casein	} 77 grs.
Butyric Acid	
Cholesterin	
Yellow Oil	

The hair was no doubt licked from the hide of a cow or calf; the epithelium was probably derived from the same source; the yellow oil was, I suspect, extracted from these by the alcohol. Casein is found in the pancreatic juice; but as the ball could not have been regurgitated from the duodenum, and the pancreatic juice is not likely to find its way into the second stomach from which the ruminal pellets are projected into the mouth, the reasonable supposition is that the casein was derived from the vegetable food of the animal or its slops.

As, according to Day, cholesterin has never been found in any vegetables used as food, we must look elsewhere for the origin of this constituent. If we assume that the principal constituents of the ball were obtained from the skin of a very young calf, we need seek no further for the fat in question; for in the *vernix caseosa* I have detected cholesterin in large proportion, as indeed have others before: (Fromherz & Juggert.) There are so many sources of butyric acid, that it is difficult to assign its proper origin in the concretion: gastric juice, perspiration, the spontaneous decomposition of fibrin, butyryn, &c., all furnish it.

In order to confirm the microscopic evidence of the presence of epithelium or of some form of keratine, I treated the minute scales

with  $\text{SO}_3$  and  $\text{NO}_5$ , and obtained sulpho-proteric acid and xanthoproteic acid, the latter readily forming xanthoproteate of potash with this alkali. From this yellow salt in solution,  $\text{SO}_3$  and  $\text{HCl}$ , as well as other acids, threw down a copious white precipitate, which was soluble in potash.

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REMARKS ON THE PREPARATION OF HYDRATED SESQUI-OXIDE OF IRON AS AN ANTIDOTE, AND ON THE DUTY OF THE PHARMACEUTIST IN REGARD TO IT.

By WILLIAM PROCTER, JR.

There are few antidotes to active poisons that have proved more uniformly successful than the hydrated sesqui oxide of iron, for poisoning by arsenious acid. Where it has failed, the ill success can, in most instances, be traced to the delay in obtaining it; to its age, and consequent dehydration, when kept ready prepared; to the excessive quantity of the poison, or to the neglect of a proper preliminary use of emetics to throw off undissolved portions of the poison. From the facility with which arsenious acid can be procured in this and other cities, this poison, from its widely known reputation for virulence, is but too frequently resorted to by the suicide. The slowness with which it dissolves in water, is a circumstance favorable to the success of treatment; and as, when ingested by design, it is merely suspended in some liquid, the sooner emesis is excited the better.

The object of these remarks has reference mainly to recall attention to a few suggestions made some years ago,\* which will enable any apothecary who will attend to them, to prepare the antidote in its most eligible form in fifteen or twenty minutes notice; and also to urge, that it is his conscientious duty to be always ready to furnish the antidote, no matter how few may be the calls for it.

The following formula, which is somewhat different from that proposed in 1843, is easily executed, and furnishes a concentrated solution of the ter-sesqui-sulphate of iron of known strength, so that the operator can graduate the precise quantity of oxide by means of his measure glass.

\* American Journal of Pharmacy, vol. xiv., p. 35.



Take of (proto) sulphate of iron, (well crystallized,) sixty-four ounces Troy.

Sulphuric acid, seven fluid ounces.

Nitric acid, sp. gr. 138, twelve fluid ounces.

Water, a sufficient quantity.

Reduce the sulphate of iron to moderately fine power in an iron mortar, mix together the acids and five fluid ounces of water, put the mixture in a large porcelain capsule on the sand bath or other regular source of heat, and add the powdered sulphate, about two ounces at a time, stirring after each addition, till the effervescence ceases, until all has been added, and the elimination of nitrous fumes has ceased. In the absence of a porcelain capsule and sand-bath, the operator may use a gallon glass jar supported in a vessel of boiling water; in either case, the vessel should be large enough to allow for active effervescence, and it is hardly necessary to say that the operation should be performed under a chimney-hood, or in the open air, to avoid the noxious fumes of nitrous acid. The dense solution thus obtained should then be diluted with water until it measures four and a half pints, (wine measure,) and then filtered through thick muslin.

Solution of ter-sulphate of iron thus prepared, has a dark, reddish-brown color in quantity, the specific gravity of 1.587 at 60° F., but little if any odor, a powerful styptic taste, and mixes readily with water, so as to form a solution with more color in proportion to its dilution than the strong liquid. Each fluid ounce of this solution contains a fraction more than 120 grains of sesqui-oxide; each fluid drachm 15 grains, and each minim a quarter of a grain; and as it is equally applicable for preparing the oxide for chemical as for antidotal purposes, this correspondence of weights with measures gives great facility in calculating any precise quantity desired.

It is this solution which I have proposed should be kept by *every* apothecary as the source of hydrated sesqui oxide of iron. Its strength is such that it requires about an equal measure of commercial solution of ammonia (sp. gr. .940,) to decompose it. The apothecary who is suddenly called upon for the antidote will proceed in the following manner:

Take of Solution of ter-sulphate of iron, half a pint.

“ Solution of ammonia, half pint, (or a sufficient quantity.

“ Water, a sufficient quantity.



Pour the solution of iron into a half gallon jar, add two pints of water, and then add the ammonia, stirring constantly until in slight excess. This is known when, after displacing the air in the jar by blowing, it continues to smell slightly of ammonia. The contents of the jar are then thrown on a piece of strong muslin, previously well moistened, and the liquid, holding in solution sulphate of ammonia, expressed from it as quickly as possible, until the oxide remains in the cloth of a pasty consistence. The cloth is then opened on a dish, water added and incorporated with the oxide by means of a spatula, and then again expressed. If the demand is urgent, the oxide may be sent without further washing, if not urgent, the washing may be repeated twice more. It is then quickly removed by a spatula from the cloth to a quart mortar, and water mixed with it by trituration, until it measures a pint, when it should be poured into a wide-mouthed bottle, corked, and the following label attached, viz :

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## HYDRATED SESQUI-OXIDE OF IRON.

(Ferri Oxidum Hydratum U. S. Pharm.)

### *Antidote to Arsenic.*

This preparation consists of Hydrated Sesqui-oxide of Iron and water, in such proportion that each table spoonful contains *thirty* grains of the dry oxide; and is intended to neutralize the poisonous effect of *Arsenious acid*, or *common white arsenic*, when taken into the stomach. It is well to precede the administration of this antidote by an active emetic of ipecacuanha or of mustard, so that any undissolved arsenic may be thus mechanically removed, if possible. If, however, this has not been done before obtaining the *antidote*, no time should be lost in giving it. The patient should take a table spoonful for a dose every five or ten minutes, but if vomiting should intervene, let a dose be given immediately after each attack, unless otherwise directed by the physician in attendance.

When the poisoning has been caused by *arsenite of potassa*, (Fowler's Mineral Solution,) *soda*, or *ammonia*, or by the salts of *arsenic acid*, after giving the first dose add six table spoonfuls of vinegar to the contents of the bottle, and shake it a few minutes, until the acidity is neutralized, and then give it as above.

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When the oxide is intended for other ferruginous preparations, as, for instance, citrate of iron, it should be washed by displacement on a cloth filter, till the washings cease to precipitate chloride of barium. The small amount of sulphate of ammonia remaining in the oxide, when prepared hurriedly as above, is of no account in a case of poisoning.

The detail in the above label is not objectionable, as it will be

often of use even to the experienced physician, not to speak of the very many who have had little if any experience in poisoning cases, and will likewise enable any person of ordinary ability to administer the antidote without loss of time.

And now a word in reference to the obvious *duty* of apothecaries, and their *actual* practice as regards a state of preparation to meet the emergencies requiring this antidote. In this country no law compels the pharmacist to keep *any* preparation; he may be without remedies of the first importance, may decline compounding prescriptions on the score of not having the material, or from any other cause, without any legal risk, and no impelling motive to the contrary exists, except self-interest and a feeling of duty. The *former* of these motives is not always appealed to; it has often happened in my experience that no reward, except moral satisfaction, has followed the trouble and expense attendant on supplying a demand for the antidote; as the sufferers too often belong to the utterly miserable poor, or the messengers come, unprovided with the means of payment, from a great distance, and, in the agitation of the moment, forget the due of the apothecary. In this city it has become a practice with many apothecaries to send applicants for hydrated sesqui-oxide to other stores; I have repeatedly been called on, after the messenger had made a circle of four, five or six stores, and walked a long distance, thus greatly delaying the application of the antidote. When it is so easy to be prepared for these occasions, it is greatly to be desired that every apothecary who has a proper regard for his reputation and duty, will provide the means as above detailed, and be ever ready.

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#### STATISTICS OF THE GERMAN UNIVERSITIES.

[The following statistical information was received from our friend Samuel C. Garrigues, in a letter dated Gottingen, Nov. 1st, 1852. Mr. Garrigues, since graduating in Pharmacy at Philadelphia, has been spending the past two years at the Universities of Berlin and Gottingen.—EDITOR.]

The following statistic review of the attendance at the different German Universities for the summer term, 1852, with particular respect to Medicine and Pharmacy, having lately made its appearance in one of the Pharmaceutical Journals, I take

the liberty of sending to you some extracts from it, hoping that they may be of some interest to you.

It had been the intention of the compiler of these statistics to include the number of students of Chemistry and Physics, but owing to the fact that in only a few of the Universities Chemistry and Physics are included as particular Faculties, whereas in the other Universities these studies are included under the head of the Philosophical Faculty, their number could not be determined.

The Prussian Universities are excluded from this list.

UNIVERSITIES.	Number of Students matriculated.				
	Entire Number.	Medical.	Surgical.	Pharmaceutical.	Students of Chemistry
Freiburg . . . . .	302	57	—	8	—
Heidelberg . . . . .	703	88	—	6	—
Tubingen . . . . .	770	126	?	?	—
Munich . . . . .	1961	255	1	47	—
Wurzburg . . . . .	722	283	6	8	—
Erlangen . . . . .	400	53	1	11	—
Giessen . . . . .	334	82	—	19	41
Marburg . . . . .	289	55	14	4	—
Göttingen . . . . .	677	185	—	33	24
Jena . . . . .	426	90	—	32	—
Leipzig . . . . .	821	156	44	19	—
Rostock . . . . .	92	18	?	?	—
Kiel . . . . .	145	38	?	?	—
Amount . . . . .	7633	1489	66	187	

*Statistic Review of the attendance at the Prussian Universities for the summer term of 1852.*

UNIVERSITIES.	Number of matriculated Students.			Those who attend the lectures but are not matriculated.	
	Entire Number.	Medical.	Pharmaceutical.	Entire.	Pharmacist.
Bonn . . . . .	984	111	...	28	6
Halle . . . . .	638	71	...	32	3
Berlin . . . . .	1409	275	...	762	129
Griesswald . . . . .	200	84	...	4	?
Breslau . . . . .	836	99	...	23	?
Königsberg . . . . .	339	71	...	...	...
Amount . . . . .	4406	701	...	849	138

By this report you will see that the Prussian Pharmaceutical students are not required to be matriculated, the propriety of which has been questioned by Professors in the German Universities.

From the above statements the following facts can be produced :

	Entire Number.	Medical and pharmaceutical.	Pharmaceutical.
1st. The entire number of matriculated students . . . . .	12,039	—	—
Number of Medical . . . . .	—	2200	—
“ of Pharmaceutical . . . . .	—	187	187
2d. Number of not matriculated . . . . .	965	—	—
“ not matriculated Pharmacutists . . . . .	—	138	138
Amount . . . . .	13,004	2525	325

From the Austrian Universities no report has reached us this fall, for the summer term ; below, however, we give the report for the last winter term of 1851-52.

UNIVERSITIES.	Entire number of matriculated Students.	Matriculated medical, surgical and pharmaceutical.	Not matriculated.
Vienna . . . . .	2178	1196	791
Prague . . . . .	1324	339	213
Amount . . . . .	3502	1535	1004

By this you will perceive that the Medical Faculties contain a large proportion of the matriculated students—namely as 1 : 2. 28.

## ON VERATRUM VIRIDE.

By THE EDITOR.

Within the last three years, numerous articles have appeared in some of the Medical Journals, attributing remarkable therapeutic powers to the *Veratrum viride*, or *green hellebore*, of this country, most of them written by Dr. W. C. Norwood of Cokesbury, South Carolina, and published in the Southern Med. and Surg. Journal. Dr. Norwood claims to have developed the therapeutic properties



of this plant, to an extent much greater than previous observers, and advocates his views with a degree of confidence not often exceeded by medical experimenters. *Veratrum viride* was known to the aborigines as a powerful medicine, and has been written about and experimented with by able physicians. Dr. Osgood of Rhode Island, in an essay published in the *American Journal of the Med. Sciences*, and republished at page 202, vol. vii. of the *American Journal of Pharmacy*, (Oct. 1835,) gives an account of many of its effects on the human system, and remarks more especially on its sedative influence on the heart, and its want of the cathartic power of its congener, *Veratrum Album*, and attributes many of his statements to his preceptor, Dr. Tully, then of Yale College. Dr. Osgood, besides, made some chemical observations, and says, "It is commonly said to contain the proximate active principle *veratrine*, as the seat of its medical properties. This opinion, however, seems to be entirely gratuitous, being drawn from its analogy in its external appearance with the European species, rather than from actual investigation. If we consult analogy in medicinal properties, instead of external appearance, our conclusions will be more rationally founded. This is, indeed, the only analogy that can give much weight to an opinion upon this point; and so far as this goes, is in decided opposition to the hypothesis, that the active principle of this species is the same as of the European, that, as has been before observed, being hydrogogue cathartic; whilst this possesses no cathartic powers." Dr. Osgood then details an endeavor to test the correctness of his conclusions by a chemical analysis. He made a saturated infusion by maceration in boiling water, precipitated by ammonia, washed the precipitate with water, and boiled it in alcohol with animal charcoal, filtered while hot, and evaporated. By this treatment a white pulverulent, inodorous and very acrid substance was obtained, producing a stinging sensation on the tongue. Dr. Osgood states that the substance he obtained was so volatile that when exposed on a filter to dry at a temperature not exceeding 120° Fah., it was nearly all volatilized or lost before he was aware of it, which prevented his further investigation of its properties.

About three years after Dr. Osgood, Mr. H. W. Worthington made a proximate analysis of *Veratrum viride*. (See vol. x. page 89, *Amer. Jour. Phar.*) He made a cold infusion of the root, precipitated it with

subacetate of lead, separated the excess of lead with sulphuretted hydrogen, evaporated to one half, boiled with an excess of magnesia. The precipitate was collected on a filter, dried, treated with boiling alcohol and animal charcoal, and the filtered alcoholic solution evaporated. The light colored pulverulent residue was nearly insoluble in water, more soluble in ether, and very soluble in alcohol. It melted when heated, and burned without residue. It had a burning acrid taste, acted powerfully as a sternutatory, and formed salts with the acids; none of which were crystallizable but the sulphate, tartrate and oxalate. From these properties, Mr. Worthington infers the identity of this substance with *veratria*.

In the absence of therapeutic experiments or an elementary analysis, the view of Dr. Osgood is strongly probable, that it is *not* *veratria*, but like *colchicia*, a distinct, though analogous principle. Dr. Osgood, after detailing his experiments, observes very properly, that "the general impression of identity in active principle with the European species has greatly interfered with the investigation this plant deserves and would otherwise have received. "This remark is but too true, and so strong is the prejudice in favor of exotic drugs, that some of the most powerful and valuable of our indigeuous plant sare neglected by the Profession until forced on their notice by the results obtained by quacks and pretenders. In our opinion the question of the true chemical character of the active principle of *veratrum viride* is well worth the attention of pharmaceutical chemists. It is well known that *sabadilla*, and *veratrum album*, contain each a peculiar alkaloid besides *veratria*, *sabadillia* and *jervia*, a peculiarity likewise noticed in *sanguinaria*, *cinchona*, and *nux vomica*. May not this be true of the American *veratrum*? With these preliminary remarks, we will give an extract from the last of Dr. Norwood's papers on the properties of *Veratrum viride*:—*Southern Med. and Surg. Jour.*, Jan. 1853.

"1st, It is acrid. This property is very limited and confined to the fauces. 2d, It is adanagic, deobstruent, or alterative; this property it possesses in a marked and very high degree, not equalled by calomel or iodine in this particular, which will adapt it to the relief and cure of many diseases hitherto beyond the reach of any remedy. Of this class of diseases, those which we think will be much benefitted by it are cancer and consumption. 3d, It is actively and decidedly expectorant, so much so that we rarely add

any other article. 4th, It is one of the most certain diaphoretics belonging to the *materia medica*; it often excites great coolness or coldness of the surface; in some cases the skin is rendered merely soft and moist; in other instances, the perspiration is free, and at other times it is most abundant; but, notwithstanding its profuseness, it does not reduce or exhaust the system, as many diaphoretics do when in excess, and therefore need not excite alarm, or be suspended on that account. 5th, It is nervine, not narcotic under any circumstances; as since our first article we have taken it more than twenty times, to test its varied powers, and we have taken it in all quantities from the production of free emesis down to the minimum dose. This property renders it of great value in the treatment of painful diseases, and such as are accompanied with convulsions, morbid irritability, and irritative mobility. For example, pneumonia, rheumatism, puerperal fever, convulsions generally, palpitation of the heart, &c. 6th, It is one of the most certain and efficient emetics known, and is peculiarly adapted to meet that indication in whooping cough, asthma, croup, scarlet fever, and in all cases where there is much febrile and inflammatory action. It often excites severe nausea and frequent vomiting; which, taken in connection with great paleness, often alarms the patient and the bystanders; but these effects, when in excess, are readily relieved by one or two full portions of morphine and tincture of ginger, or of laudanum and brandy. One grand and leading feature is, that the exhaustion which follows is not excessive and permanent, but confined merely to the effort. Again, the matter first ejected is a large quantity of thick, slimy mucous, and soon after the liver is called on to pour forth its own fluid in abundance. 7th, The seventh property is its most valuable and interesting, and for which it stands unparalleled and unequalled as a therapeutic agent. So much has been written on what we call the sedative—arterial sedative—properties of this agent, on the power it possesses of controlling and regulating arterial action, that we shall not again run over the amount of evidence on this part of the subject.”

“In small portions, we have found nothing equal to it in exciting and promoting appetite.”

Dr. Norwood recommends the following formula for the tincture:—

“Take of dried root of *Veratrum viride*, eight ounces.

“Alcohol, .835, sixteen ounces.

“Macerate for ten days or two weeks, and express. Medium dose for an adult male, eight drops, to be increased one or two drops every portion, until nausea or vomiting, or a reduction of frequency of the pulse takes place; then reduce to one-half in all cases. Females,



and persons from fourteen to eighteen years of age, should commence with six drops, and increase as above. Children from one to two years of age, to commence with one drop; from two to five years, two drops, and increase one drop. The usual interval with us is three hours between the portions. In ordinary cases of pneumonia we usually continue it three days after the symptoms are subsided. In typhoid fever, and many other diseases, it requires to be continued longer. For the satisfaction and information of the profession, we would state that it may be continued indefinitely, in moderate doses, or short of nausea, without the least inconvenience."—*Southern Med. and Surg. Journ.*, Jan. 1853, page 35.

Dr. Norwood's other papers will be found in the same Journal, for 1850-51-52.

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#### UNITED STATES DISPENSATORY—AN ERROR.

To the Editor of the American Journal of Pharmacy.

DEAR SIR:—A small error, it seems, has managed to find its way into the late (9th) edition of the Dispensatory, and as I have seen no mention of it elsewhere, I avail myself of this means of calling attention to the fact, that pharmacutists and others having copies of this almost indispensable commentary on the American and English Pharmacopœias, may correct the same. It occurs at page 1262 in the formula for *Unguentum Hydrargyri Nitratis* of the U. S. Pharmacopœia; the quantity of nitric acid is *eleven* instead of *fourteen* fluid drachms. Prior to the late revision of our National Codex, eleven fluid drachms of the *then officinal acid*, having the specific gravity 1·5, was used; but at that time the standard acid was changed from the sp. gr. 1·5, to the more natural strength having the sp. gr. 1·42; and of this acid, fourteen measures are about equal in the amount of *real* acid they contain, to eleven measures of the stronger.

Richmond, January 11, 1853.

JOS. LAIDLEY.

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#### ON THE NATURE OF THE OILY SUBSTANCE EXISTING IN COMMERCIAL CHLOROFORM.

By HENRY PEMBERTON.

In order to ascertain whether the use of common whiskey, in the preparation of chloroform, caused the formation of any sub



stance that would not be present if concentrated alcohol had been employed, the following experiments were made.

23½ lbs. of chloroform, sp. gr. 1.49, devoid of free chlorine and acid, made from alcohol of 92 per cent., was distilled in a glass retort, at first in a water bath, and subsequently in an oil bath. The last portion of the distillate from the water bath had nearly the same sp. gr. as the original article, but had a slight odor recalling that of fusel oil. The distillate from the oil bath varied in its properties as the distillation progressed and the heat increased, when distilling at 212° F., a density of about 1.200, and at 350° F. of .865; the low boiling point and high density being due to the presence of chloroform, which is retained by the foreign substance with great power, notwithstanding the great difference in their boiling points.

The amounts of liquid thus obtained were as follows:

80 minims,	boiling between 212° and 270° F.,	sp. gr. 1.175
175      “      “	270° and 350°      “	.92

A second experiment conducted in the same manner, but with chloroform made from another barrel of the same kind of alcohol, gave

133 minims,	212° and 270° F.,	sp. gr. 1.33
120      “      “	270° and 300°      “	.995
100      “      “	300° and 350°      “	.865

23½ lbs of chloroform prepared from common whiskey, but otherwise by the same process as the first, when distilled as before mentioned, gave

80 minims,	212° and 270°	sp. gr. 1.225
110      “      “	270° and 350°      “	.925

A second lot from whiskey gave

70 minims,	212° and 270°	“ 1.200
170      “      “	270° and 350°      “	.895

A third experiment gave

180 minims,	212° and 270°	“ 1.225
130      “      “	270° and 350°      “	.895

In all of the above trials the whiskey was from different barrels, purchased at different times from different houses. It may therefore be considered fairly to represent the whiskey of commerce.

It is evident, by a comparison of the amounts of oily matters obtained from chloroform derived from whiskey, with that obtained

from concentrated alcohol, that no disadvantage can arise from the use of whiskey in the place of concentrated alcohol, and that if chloroform of absolute purity is required, resort must be had to means of purification subsequent to its manufacture, which is by far easier and cheaper to accomplish than to obtain chemically pure alcohol. By careful rectification the chloroform can be completely freed from every trace of these foreign matters.

In each of the above experiments there remained a small quantity of liquid in the retort, very nearly the same quantity, apparently, from each, but which required so high a temperature for boiling, that the oil bath had to be replaced with the naked flame of a spirit lamp. The distillate now obtained at first resembled the latter portions of that previously distilled, but soon changed its appearance, becoming dark colored, nearly black, and its density increasing to .985, its taste and odor also somewhat different. The distillation was continued until all the liquid had passed over into the receiver and a small quantity of a black residue remained, which was soft, like wax, without taste or odor; burnt like pitch, with a thick smoky flame; soluble in chloroform, but not in water or alcohol.

On examining the nature of the substance spoken of above, I have found that it contains two substances of very different boiling points and densities, but similar chemical properties. The first liquid, when as pure as it could be obtained by re-distillation, is a colorless liquid of a fruity, aromatic odor, somewhat resembling a mixture of acetate and valerianate of amyle, of a pungent ethereal taste, and producing coughing, inflammable, burning like alcohol, with a clear blue flame, of sp. gr. 840, and boiling at about 230° F. The second liquid has in a lesser degree the taste and odor of the above, it is less ethereal and more oily in its taste and appearance. The boiling point could not be determined with any accuracy, as the thermometer rose gradually from 280° to 420°, at which point the vapors condensed in violet streaks in the condenser, forming a brownish liquid, indicating some decomposition of the liquid and separation of carbon. Its density was about .985.

On treating a portion of each of the above separately with bichromate of potassa and oil of vitriol, they were each converted into a mixture of valerianate of oxide of amyl and free valerianic acid, without any perceptible formation of muriatic acid, chlorine,

or other products, thus showing them to belong to the amyl series, and that their formation is probably due to the fusel oil, of which all commercial alcohol contains traces, and which it is difficult to remove completely.

These liquids differ from amylic alcohol by their odor, taste, and boiling points, and also in their re-action with oil of vitriol. Fusel oil, when mixed with sulphuric acid, forms a purple solution so dark as to be opaque. These substances only become light brown and retain their transparency.

Soubeyran and Mialhe have mentioned the existence of the oily substance in chloroform prepared from alcohol, but they have erred in describing it as a chlorinated oil. They speak of it as being heavier than water, and chlorine being found among the products of its combustion. They have evidently experimented with a mixture of the substance in question, with chloroform, which could easily be mistaken for a component part of the compound, as its characteristic smell is entirely masked by the amyl compound, and it is retained with such pertinacity as to require a temperature of  $250^{\circ}$  to separate them.

It is probable these substances are a mixture of *amylenes*, *paramylenes*, and *metamylenes*, isomeric modifications of a product derived from amylic alcohol, by the subtraction of water, and bearing the same relation to amylic alcohol that olefiant gas does to alcohol. They are thus described by Regnault (Cours. élémentaire de Chimie, 2d edition, tome iv., p. 63.) "Amylene thus obtained is a colorless liquid, very fluid, boiling at  $39^{\circ}$  C. ( $102^{\circ}$  F.); the density of its vapor is 2.45, and its equivalent  $C_{10}H_{10}$ , corresponding to four volumes of vapor like that of olefiant gas. Amylene is susceptible of forming two isomeric modifications, paramylene  $C_{20}H_{20}$ , and metamylenes, of which the formula is  $C_{30}H_{30}$ , or  $C_{40}H_{40}$ . These two products are generally formed at the same time with amylenes, and are found in the last portions of the distillate, but they can be obtained directly by distilling, several times consecutively, amylenes with chloride of zinc. Paramylene boils at about  $160^{\circ}$  C. ( $320^{\circ}$  F.); the density of its vapor is double that of amylenes and has thus determined its formula to be  $C_{20}H_{20}$ . Metamylenes does not distill until about  $300^{\circ}$  C. ( $572^{\circ}$  F.,) but it is probable that it has not yet been obtained in a state of purity."

The coincidence between the substances here described and

those existing in chloroform is sufficient to justify the belief that the oily substances are a mixture of paramylene and metamylenes, with, possibly, traces of amylene, though the greater portion of the latter would probably be lost, from its low boiling point, with the incondensable gases from the still in the preparation of the chloroform. It is not likely that any injurious effects could arise from the presence of these substances, even if a re-distillation to remove them was not resorted to, since their slight volatility would prevent their vapor from being mixed in any perceptible quantity with that of chloroform.

*Philadelphia, Feb. 14th, 1853.*

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ON THE ACTION OF SULPHURETTED HYDROGEN AND SELENI-  
URETTED HYDROGEN UPON CHLOROFORM, IN PRESENCE OF  
WATER.

By A. LOIR.

*Action of Sulphuretted Hydrogen.*—If sulphuretted hydrogen is passed into chloroform, under water, there is formed in a short time a copious, white crystalline volatile deposit, of a most unpleasantly strong, garlicky odor. The chloroform disappears completely if the gas is passed into it for a sufficient length of time, and the liquor is strongly agitated. No gas conducting tube becomes often obstructed. The secondary products are formed. If chloroform is placed in a frigorific mixture, and saturated with dry sulphuretted hydrogen, there is formed only an insignificant amount of the crystalline body, and which no doubt is formed on account of the imperfect dryness of the gas and apparatus, but if water is added, immediately the crystalline body shows itself at the usual temperature. The perfectly formed crystals, are four sided, flat, long prisms, whose base is inclined towards its angles.

This body can become very hard and form a solid mass, if the temperature permits it to be pressed for a sufficient length of time. It is very volatile. Exposed to the air it gradually disappears. Placed in a glass vessel it sublimes towards the upper part of the vessel, the crystals group themselves into beautiful ramifications, and change their places by every variation of temperature. Its taste is lively, garlicky, then burning, resembling chloroform. It



is heavier than water, and does not alter test paper. It melts with the warmth of the hand and solidifies again below zero ( $32^{\circ}$  F.); it burns more readily than chloroform; it decomposes easily if attempted to be dried. I have found great difficulty in obtaining it identical in different operations; since it can only be freed from adhering water by pressure, it therefore always contains more or less thereof. Consequently I have not been able to determine correctly its formula, in particular the number of equivalents of water, which have united with chloroform and sulphuretted hydrogen.

The analysis shows that the chloroform and sulphuretted hydrogen have united in equal equivalents in this combination.

*Seleniuretted Hydrogen.*--The preparation of the above compound with seleniuretted hydrogen, is the same as that of the preceding body; its properties are analogous.

Its formation, appearance, and reaction, show this body to possess the same composition as the preceding compound. From want of material I was unable to carry out its analysis.—*Jour. für Pract. Chemie*, from *Compt. Rend.* xxxiv. 14—547.

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#### ON PIPERIDINE. A NEW ALKALOID.

By M. CAHOURS.

In a paper published in the 70th vol. of the *Ann. der Chemie und Pharmacie*, MM. Rochleder and Wertheim announced that on submitting to distillation a mixture of Piperine and caustic soda, a volatile oily base is obtained, possessing all the properties of picoline.

Wishing to make a very deep research into the nature of this base and its isomeric aniline, M. Cahours distilled, according to the directions of the above-mentioned chemists, one part of pure piperine with from  $2\frac{1}{2}$  to 3 parts of caustic potash. The products of this distillation, collected in a cooled receiver, was found to be composed of water, two distinct volatile bases, and a trace of a neutral substance possessing an agreeable aromatic odor, recalling that of the derivatives of the benzoic series.

On treating the crude product with fragments of caustic potash, a light oily matter, soluble in all proportions of water,

was separated, and which, submitted to distillation, was almost entirely disengaged between  $105^{\circ}$  and  $101^{\circ}$  C. Towards the end of the operation, the thermometer rose rapidly to  $210^{\circ}$  C., and remained stationary at that point. The most volatile portions, forming more than nine-tenths of the crude material, being submitted to a second rectification, distilled at a temperature of  $106^{\circ}$  C. It is a colorless liquid, possessing a strong ammoniacal odor, at the same time resembling that of pepper; it restores the blue color of reddened litmus paper, has a very caustic taste, and saturates the most powerful acids. It dissolves in all proportions of water, to which it communicates very distinct alkaline properties; the solution acts in a manner analogous to that of ammonia with respect to saline solutions; it does not, however, appear to re-dissolve the oxides of copper and zinc.

This base forms perfectly crystallized compounds with hydrochloric, hydrobromic, hydriodic, sulphuric, nitric and oxalic acids. The hydrochlorate yields with chloride of gold a crystalline powder, formed of small needles of a golden yellow color; and with the bichloride of platinum, a compound which crystallizes in long needles of an orange color. Several analyses of this substance made by M. Cahours, furnish exactly the same results; the numbers correspond to the formula  $C^{10} H^{11} N$ , which has been verified as well by the analyses of its salts and some of its derivatives, as by the density of its vapor; the preceding formula representing four volumes. M. Cahours proposes to give this new alkali the name of piperidine.—*Annals of Pharm.*, May 1852.

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#### ON THE MANUFACTURE OF RESIN OIL FROM ROSIN.

[The following account of "Resin oil," and its products, is extracted from an article in the (London) Pharmaceutical Journal for January, 1853, and will throw some light on the nature of similar products made in this country.—EDITOR.]

The resin, from the distillation of which the resin oil, or as it is most frequently called the pine oil is obtained, is the black kind, called also colophony, and it would appear that the discovery of this oil originated from the circumstance that a work-

man employed in a turpentine distillery committed the oversight of carrying the distillation of the rough turpentine beyond the point at which the oil of turpentine had passed over, the consequence of which was, that the resin itself was decomposed by the heat, and resin oil produced. Large quantities of this oil are manufactured in the neighborhoods of London, Liverpool, Hull, Bristol, Glasgow, &c. For this purpose, cast-iron stills of moderate dimensions, with copper worms attached, are usually employed; the first products of distillation being water, acid, and naphtha, after which, on the application of an increased temperature, the resin or pine oil passes over, the first portions of which are kept for mixing with other oils, whilst the latter and heavier oil is employed in the manufacture of grease for lubricating the bearings of heavy machinery, and the axles of railway waggons. &c. &c.

A good deal of secrecy was at one time maintained respecting the manufacture of this oil, and not a few unscientific persons paid dearly for their acquaintance with some who had obtained a knowledge of the manufacture.

The best method of manufacturing resin oil is by the lately patented process of Mr. Furck, in which the distillation is effected by the joint operation of heat obtained from an open fireplace, applied to the exterior of the still, and steam-heat applied to the interior. For this purpose, an iron still of a suitable capacity is employed, provided with a head and curved neck, communicating with a copper worm by means of a moveable joint of pipe placed between them. To the upper part of one side of the still is a man-hole, for introducing the resin, and removing any pitchy deposit from the still; to the lower part of the still an exit pipe of ample dimensions is connected, through which as much as possible of the residuum of the distillation is conducted off at the close of the operation. On the opposite side to that of the man-hole are two entrances or close joints, through which steam pipes pass into the still, one of these being conducted down the inner side and along the bottom of the still to near the centre, where it is curved into a circular form around it, whilst the other, entering the still close above the former, terminates in a perforated coil in the upper part of the still. The annular terminating portion of the steam pipe surrounding the bottom of the still is perforated with



small holes for the escape of the steam during the time the steam is used in the distilling process. A spiral or any other form may be given to the perforated terminating portion of the steam-pipe. As the careful conducting of the operation depends on the due regulation of the heat employed, a thermometer is inserted into the still in the usual way, so as to indicate the temperature of the contents of the interior.

In conducting the process of distillation, a sufficient quantity of resin is put into the still to fill nearly two-thirds of its interior space; the fire is then lighted under the still, and a sufficient quantity of steam is also blown in to moisten the resin; the moveable connecting pipe placed between the neck of the still and the worm, being detached before the fire is made. During the early stages of raising the temperature of the resin, during which the acid and water are driven off, a considerable agitation and frothing up occurs, during which the resin is liable to overflow, and if allowed to pass into the worm, would choke it up, and impede future operations; it is therefore better to drive off the acid and water to waste in the way above mentioned. The acid will begin to escape when the thermometer indicates the temperature of the resin to be  $325^{\circ}$  Fahr., at which point the fire must be carefully regulated, and the temperature maintained from  $300^{\circ}$  to  $325^{\circ}$ , until all the acid has ceased to flow from the neck of the still. The connecting pipe is then attached to the neck of the still and the worm, and the joints well luted. Steam is now blown in through the pipe into the bottom of the still, the temperature being kept at about the point before mentioned. As the steam rises through the melted resin, it takes up and carries the naphtha with it, in the form of vapor, the mingled vapors passing off into the worm, where they are condensed, and the product collected in a suitable receiver. This operation is continued until the naphtha ceases to come over, which is indicated by the appearance of the product, or when about 15 per cent. of the bulk of the contents of the still has been distilled.

As soon as the naphtha has ceased to flow from the worm of the still, the fire is increased until the contents of the still are raised to  $500^{\circ}$ ; the steam all the while being allowed to flow in, and kept flowing in during the remainder of the process. The oil commences to rise with the steam when the heat is raised to  $550^{\circ}$ ,



the mingled vapors passing into and being condensed in the worm, from whence they are discharged into a suitable receiving vessel. The temperature of  $550^{\circ}$  must be kept up until the flow of oil nearly or quite ceases. The bulk of oil should be about twenty-five per cent. of the original quantity of resin.

The contents of the still are then raised to  $600^{\circ}$ , when the flow of oil and moist vapor recommences, and continues until a second quantity of oil, equal to about twenty-five per cent. of the resin, is discharged, when the flow of oil will nearly cease. The temperature of the still is then raised  $50^{\circ}$  higher, when the flow of moisture and oil again commences, and continues under the same heat until a third quantity of oil is discharged, equal to about  $12\frac{1}{2}$  per cent. of the bulk of the resin originally placed in the still, after which the fire is extinguished. The residue left in the still is of a nature like pitch; this is drawn off through the discharge pipe. During the process steam is injected into the upper pipe upon the oil whilst it is in a state of vapor, thus producing a purifying influence upon the oil.

An oil suitable for employment as a *paint oil*, is prepared, according to Mr. Furck's process, by first placing in the still some of the oil obtained at a temperature of  $650^{\circ}$ , as before described, and the man-hole of the still having been closed and luted, the contents are then raised to  $650^{\circ}$ , and kept at that point until the process is completed. At this temperature the oil passes over as vapour, when steam is injected into the still through the upper steam pipe before referred to. The oil thus obtained is condensed in its passage through the worm, and having been received in suitable vessels, is next re-distilled in the same way, after which it is placed in a kind of kettle or pot, in which its temperature is raised to about  $225^{\circ}$ , by means of steam blown in through an open pipe dipping to near the bottom of the vessel; and having attained that point, steam is let in through another pipe, the end of which is enlarged and perforated by numerous small apertures, until the oil is freed from all acid and coloring matter, when it will be quite clear, and fit to be boiled like linseed oil for painter's purposes.

To obtain an oil fit for the uses of *tanners and curriers*, some of the oil obtained at  $650^{\circ}$ , as before described, is placed in the still, and about five per cent. of slaked lime added; the man-hole of the

still is then closed and luted, and the contents raised to  $600^{\circ}$ , and maintained at this point until the process is completed. The steam is introduced through the lower steam pipe when the temperature has reached  $300^{\circ}$ , and through the upper steam-pipe when it has attained to  $600^{\circ}$ . The oil passes off in vapor to the worm, where it is condensed and collected, after which it is re-distilled in the same manner, caustic lime being substituted for the slaked lime used in the previous process. The oil thus obtained is placed in the purifying vessel before mentioned, and its temperature raised as in the process for producing painters' oil. This oil is stated to be clear and pure, entirely free from acid, and forming an excellent carriers' oil.

A *lubricating oil* for the uses of machinery, &c., is obtained by first placing the oil produced at  $550^{\circ}$  in the still, with about five per cent. of its weight of slaked lime; the man-hole is closed and luted, and the temperature raised to, and sustained at about  $550^{\circ}$ , until the process is completed. The steam is let on as described in making tanners' oil; and the oil having been condensed, is re-distilled and treated in exactly the same way as tanners' oil, after which it is run into the purifying vessel, and treated as before described. It is thus obtained pure and limpid.

Resin oil is also obtained in the process for manufacturing gas from resin; and in a patent granted to Mr. Robertson in 1848, a claim is made for the manufacture of a spirit (ethereal oil) from resin oil thus obtained. This is the same as the naphtha mentioned above, which is directed to be purified by re-distillation once, twice, or oftener, in combination with a small quantity of lime, until it attains the required freedom from color, three-quarters of an ounce of lime being used to each pound of spirit.

In France, M. Dives patented in 1828 a process for making a drying oil with resin oil, and in 1838, MM. Payen and Huran patented a process for the manufacture of a lubricating grease by combining lime, potash, or soda, more particularly the former, with resin oil. MM. Fremy and Boutin undertook a series of investigations with regard to the removal of the pyrogenous odor which accompanies resin oil, with the view of rendering this oil fit for the manufacture of soap. In this, however, they were unsuccessful, and we are not aware of any successful attempts to remove the odor which so tenaciously adheres to this oil. M.

Fremy has paid much attention to an investigation of the chemical nature and properties of resin oil and the other products obtained in its investigation.

M. Serbat, of St. Saubre, near Valenciennes, has also paid much attention, in a commercial point of view, to the manufacture of this oil, and particularly of grease for machinery, the process for which was patented in France in 1846. In 1848, the Paris Society for the Encouragement of the Arts, &c., presided over by M. Dumas, made a report on this grease, from which we extract the following :

“ The resin known under the name of *black* resin is submitted to distillation in suitable apparatus, and the *first* products of the distillation are separated. These products consist of oil, part of which is put aside to be employed in painting, and the remainder is used for making grease.

1. Essential oil for painting,        -        -        26 kilog.

2. Oil for grease making,            -        -        431 kilog.

“ The oil obtained by this distillation is purified in the following manner: All the oil intended for making grease which comes from the still, is poured into a copper boiler; it is heated to the boiling point, and allowed to boil for two hours. To the oil is added either fragments of zinc or of slaked lime, in the following proportions:—oil, 97; zinc, 1; or lime, 1.

“ The object of the addition of these agents, is : 1st, to separate the acids which may exist in the resin, or may be formed during the operation. 2ndly, to deprive the oil of the water which has passed off during the distillation, and which volatilizes during the boiling. The oil thus boiled is drawn off hot, and left at rest in copper reservoirs, for a longer or shorter period, but in six hours afterwards it may be employed either in the preparation of lime-paste or of grease. Usually the oil is divided into two portions, one for making the lime-paste, and the other for conversion into grease by the use of the lime-paste.

“ The reservoir for the oil must be furnished with two taps; one above to draw off the oil, and the other below to separate the dregs. These dregs are not lost; the oil contained in them is separated by water and heat.

*Preparation of the Lime Paste.*

Take of slaked lime        -        -        36 kilog.

“    oil                        -        -        52 kilog.

“ Heat the oil, and when moderately hot add a portion of the slaked lime, which must be incorporated by stirring with an iron spatula, pierced with holes in the upper part. When a portion of the lime is incorporated, add more, by degrees, until the mixture is complete.

“ The oil must be only moderately heated, for if heated too much, and much lime be added, there will be danger of frothing up and boiling over the vessel. The boiler in which the operation is performed must be heated only at the bottom. It must be of cast-iron ; the operation takes about twelve hours. It is complete when the mixture is become liquid, and of a chocolate color. Seen in the dark this mixture is phosphorescent.

“ This lime-paste, when cold, may be used for making grease ; it retains its properties for an indefinite time.”

#### *Manufacture of the Grease.*

The lime-paste being prepared, it must be kept warm : and then proceed as follows :

“ Take 10 kilog. of oil, pour it into a small boiler furnished with a lip, and pour into it (violently shaking it) 1 kilog. of the liquid lime-paste. Then pour the mixture, when well shaken, either into boxes or casks ; it solidifies with extreme rapidity, and before it is cool.”

One can scarcely believe that it can be the addition of lime which solidifies the oil, as the lime-paste is in a liquid state ; there is, no doubt, a particular combination formed. The grease, thus solidified, melts when again heated, but does not again solidify. The advantages of grease made in this manner are as follows :— It is quickly prepared ; its quality is uniform ; it does not soil or daub the machines ; it is not shiny ; and does not increase the friction.

Resin oil is much used in France in the manufacture of printing ink ; hence, we believe, one source of the unpleasant odor derived from some of the French newspapers. Mr. Pratt, of New York, patented the application of resin oil in place of linseed and other oils in the manufacture of printing ink in 1848. For this purpose one pound of resin oil, thirteen ounces of resin, and three ounces of yellow soap are well mixed together by the application of heat and continued stirring, the proportion of soap and resin being in-



creased when the ink is required to be more stiff, and decreased when it is required to be more fluid. Pigments, or coloring matters of any kind, are to be added, as in other cases.—*London Pharm. Journ.*

## THE COMPOUNDS OF IODINE WITH QUININE AND MORPHINE.

BY F. W. WINCKLER.

*Iodide of Quinine.*—When iodide of potassium and sulphate of quinine are dissolved in boiling water, in equivalent proportions, regular crystals (free from iodine) of sulphate of quinine are formed. A similar result is obtained when, instead of sulphate of quinine any other salt of quinine formed with an oxy-acid is used. The hydro-acids give a contrary result. A mixture of hydrochlorate of quinine and iodide of potassium, in equivalent proportions, precipitates a small quantity of iodide of quinine in a resinous state. For the complete decomposition of the hydrochlorate of quinine, Winckler has found that four equivalents of iodide of potassium are necessary. The compound then produced consists of two equivalents of quinine, with one equivalent of iodine, or 126 parts of iodine and 328 parts of quinine. This combination has, when dried, the properties of a resin. When cold, after being thoroughly dried, it is easily powdered without being electric, as the pure quinine is when rubbed. It is white, without smell, permanent in the air, and possesses a very bitter taste. It dissolves considerably in water, almost in any quantity of spirit, and also in ether. All these solutions are clear, colorless, and leave behind, when evaporated, the iodide of quinine in the form of a transparent resin. By chlorine, concentrated sulphuric and nitric acids, this salt is immediately decomposed, with the separation of its iodine. Its combustion on platina foil is with difficulty effected, and the residuum, after combustion, contains no trace of potash. The analysis of this salt gave—

		Found.		Calculated.
Quinine,	- -	71,58	- -	72,166
Iodine,	- -	28,42	- -	27,834
		<hr/>		<hr/>
		100,00		100,000

*Iodide of Morphine.*—This salt consists of one equivalent of morphine and one of iodine. It is to be obtained by dissolving

120 parts by weight of dry acetate of morphine in 960 parts of cold distilled water, and filtering the solution. Add previously to filtration a few drops of acetic acid, if any of the morphine remains undissolved. Decompose the filtered solution with a solution containing sixty parts of iodide of potassium. The iodide of morphine crystallizes out of this liquid after some time in very fine crystals, and may be obtained in still finer crystals if the mixed solutions are warmed in a water-bath, and then slowly cooled. It thus separates in transparent, shining, colorless, four-sided prisms, which cannot be distinguished by their appearance from sulphate of quinine. Iodide of morphine dissolves slightly in cold water, but readily in hot water, and easily in alcohol. Its solutions have a bitter taste. The analysis of this salt gave—

		Found.			Calculated.
Morphine,	-	71,4	-	-	71,24
Iodine,	-	28,6	-	-	28,76
		<hr/>			<hr/>
		100,00			100,00

—*Annals of Pharm., and Jahrbuch fur Prakt. Pharm.*

### VESICATING OIL.

By E. DUPUY.

The solubility of cantharidin in chloroform, as shown by the experiments of Professor W. Procter, suggested to me the idea of using that vehicle in combination with a fixed oil to obtain a vesicating agent, freed from the disagreeable concomitants of the ordinary fly blister, and retaining the cantharidin in a soluble state. I proceeded thus:

Powdered Cantharides, one part.

Chloroform, }  
Castor Oil, } of each (by weight) one and a half parts.

To the powder was added the mixture of chloroform and oil in a close vessel; the ingredients were transferred, after some hours, to a glass apparatus, and the liquid displaced in the usual way. It amounted to about two-thirds of the original bulk of the liquid employed. A few drops of the vesicating oil applied to the arm of an adult produced a perfect blister in eight hours. Its easy application on any given surface may be of value as a vesicatory or epispastic. I would suggest the use of oiled silk over the appli-

cation of it to the skin; by retaining the moisture of the skin it will favor the action of the oil.

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### THE BEST MEANS TO PRESERVE LEECHES HEALTHY.

By GUSTAVUS SCHÜLLER.

The apothecaries in Moldavia are, according to the sanitary laws, compelled to keep constantly a stock of at least 200 healthy and serviceable leeches. But, particularly as the hot summer months are the most prejudicial season for these animals, it often happens that in the time of the greatest need no leeches are to be obtained.

Amongst the various means which have been recommended to keep leeches healthy, and to restore the sick ones, good well-burnt wood charcoal has proved, according to my experience, to be the best, as shown by the following experiment. I washed the charcoal well three or four times with fresh spring water, to separate the adhering ashes, and then laid it, while wet, and without breaking it smaller, in a large glass cylinder; put the sick leeches, recently washed, into this cylinder, but did not give them any more water, as enough was to be found in the washed charcoal. The glass was tied over with a piece of linen and placed in a cellar, where for five days the leeches were resigned to their fate.

After this period I found the leeches, to my satisfaction, perfectly well. They were quite in a condition to be used, which was not the case in their sick condition.

For two years I have treated my leeches in this way, and always retained them healthy and serviceable. The number of deaths amongst them has been very small. The only precaution I observe is to place all my leeches for eight days in summer on recently washed charcoal, and for two weeks in winter. The method is a cheap one, and one easy of execution.—*Buchner's Repertorium, from Annals of Pharm., for Aug. 1852.*

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### CASTOR OIL SOAP.

Stuncke states that castor oil soaponifies readily with alkalis, and gives with soda a solid white soap, which, in the form of pills, is a certain and agreeable purgative.—*Arch. der Pharm., and Ann. Pharm.*

## ON ESSENTIAL OIL OF GINGER.

By A. PAPOUSEK.

The root of *Zingiber officinale* contains, according to Morin, an essential oil. To obtain this in sufficient quantity, ginger was submitted to distillation with water. With the water a yellow oil goes over, which possesses in a high degree the odor of ginger, and a burning aromatic taste. Its boiling point is  $475^{\circ}$  F., its specific gravity 0.893.

The raw oil was deprived of water by pieces of fused chloride of calcium, and kept in a retort at a temperature below its boiling point. At  $302^{\circ}$  F. a colorless oil evaporated, which on analysis gave the following numbers:

Carbon . . . .	81.03	80 =	81.49
Hydrogen . . . .	11.58	69	11.72
Oxygen . . . .	7.39	5	6.79

$C^{80} H^{69} O^5 = C^{80} H^{64} + 5HO$ . This oil is therefore a mixture of hydrates of a hydrocarbon isomeric with oil of turpentine.

As the oil acquired a darker color and began to undergo decomposition (as was known by the formation of water) when the heat was continued, the distillation was carried no further.

The raw oil was repeatedly distilled with anhydrous phosphoric acid. The yellow distillate gave the following numbers on analysis:

Carbon . . . .	87.99	10 =	88.24
Hydrogen . . . .	11.88	8	11.76

The formula  $C^{10} H^3$  places this oil with the numerous series of hydrocarbons usually characterised as the camphene series. The separation of the hydrate-water appears to be effected with equal ease by the action of muriatic acid, as by that of anhydrous phosphoric acid.

If muriatic acid gas be passed into the raw oil, the latter acquires a brown color, even if care has been taken by cooling that the action should not be too violent. The brown oil, saturated with muriatic acid, was washed with water, then submitted to distillation with water, and the product, which is of a yellowish color and contains chlorine, dried over chloride of calcium. As shown by analysis, these operations, employed for the purpose of purification, partially decompose the muriatic acid compound, forming a mixture of a muriatic acid compound



in an unchanged state with a hydrocarbon which has lost its muriatic acid. Analysis gave—

Carbon . . . . .	73.39	80 =	73.45
Hydrogen . . . . .	10.36	67	10.25
Chlorine . . . . .		3	16.30

$C^{80} H^{67} Cl^3 = C^{80} H^{61} + 3ClH$ . This formula may be split in the following manner:  $3(C^{20} H^6, ClH) + C^{20} H^{16}$ .

According to this, the essential oil of ginger belongs to the same class of essential oils as the coriander oil. The ginger employed so plentifully as an aromatic in cookery must therefore also belong to the camphene group of aromatics.—*Lond. Chem. Gazette, from Sitzungsab. der Akad. der Wissensch. zu Wien. July, 1852.*

#### ON CORIANDER OIL.

By A. KAWALIER.

The fruit of *Coriandrum sativum* was pounded and subjected to distillation with water. The oil which swims on the water which distils over is yellowish, nearly colorless, and possesses the odor and taste of coriander in a high degree. In a very diluted state the odor of this oil resembles that of orange blossoms. Its specific gravity at 57° F. is 0.871, its boiling point 302° F. In ascertaining the composition of this oil, for the first and second experiments it was allowed to stand over chloride of calcium; for the third, a large quantity of the oil was exposed in a retort on the oil bath to a temperature below its boiling point. The portion of oil which came over last was employed for the analysis. The air was removed from the distilling apparatus during the investigations by means of carbonic acid. The analysis gave—

Carbon . . . . .	77.62	78.01	77.73	10 =	750.0	77.92
Hydrogen . . . . .	11.64	11.69	11.63	9	112.5	11.69
Oxygen . . . . .	10.74	10.30	10.64	1	100.0	10.39

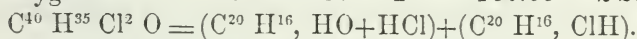
The formula  $C^{10} H^9 O$  is the same that expresses the composition of Borneo camphor. Coriander oil is therefore to be considered as the hydrate of an oil having the same composition as oil of turpentine,  $C^{10} H^9 O = C^{10} H^8 + HO$ .

If the oil mixed with anhydrous phosphoric acid, be repeatedly submitted to distillation, a yellowish oil, of a nauseous odor, of the composition of oil of turpentine, is obtained. This contains

Carbon . . . .	88.28	10 =	750	88.23
Hydrogen . . . .	11.78	8	100	11.77

A stream of muriatic acid was passed into the crude oil, care being taken, by surrounding the vessel with ice, that the temperature should not rise too high. No crystalline compound was obtained in this manner. The product of the operation was washed with water to which some carbonate of soda had been added, dried over chloride of calcium, and submitted to analysis, it gave—

Carbon . . . .	67.51	67.51	40 =	3000.00	67.81
Hydrogen . . . .	10.50	9.52	35	437.50	9.89
Chlorine . . . .	20.40	20.40	2	886.56	20.04
Oxygen . . . .	1.59	2.57	1	100.00	2.26



Another portion of powdered coriander, distilled with water, gave an oil agreeing in all its properties with the above-mentioned. It was deprived of water by chloride of calcium, and submitted to distillation by itself at a temperature below its boiling point. The portion first evaporated possessed (as shown by analysis I.) the same composition as that which came over last (analysis II.):

	I.	II.			
Carbon . . . .	85.67	85.47	80 =	6000.0	85.41
Hydrogen . . .	11.58	85.47	66	825.0	11.74
Oxygen . . . .	2.75	2.94	2	200.0	2.85

$$\text{C}^{80} \text{H}^{66} \text{O}^2 = 4(\text{C}^{20} \text{H}^{16}) + 2\text{H}_2\text{O}, \text{ or } 2(\text{C}^{20} \text{H}^{16}) + 2(\text{C}^{20} \text{H}^{16}, \text{HO}).$$

Coriander oil, according to these experiments, is an oil of the camphene family, and contains various quantities of hydrate water, which can be extracted by anhydrous phosphoric acid (not by chloride of calcium,) in consequence of which it passes over into a hydrocarbon isomeric with oil of turpentine. The fruit of the coriander is frequently employed for the seasoning of cakes and similar articles. It follows, from the above results, that the coriander belongs to the spices of the camphene group, in which are included cloves, pepper, juniper, cummin, parsley,

calamus, the rinds of citrons, oranges and limes, and wormwood.  
—*Lond. Chem. Gazette, from Sitzungsber. du Kaiserl. Akad. du Wiss.*, ix. p. 313.

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### TESTS TO ASCERTAIN THE GENUINENESS OF BALSAM OF COPAIBA.

By M. GUIBOURT.

M. Guibourt, being one of a commission appointed by the "École de Pharmacie de Paris" to examine and report on the quality of the copaiba contained in the capsules manufactured in such great variety at the present day, took advantage of the opportunity to examine the different samples of this drug found in commerce, so as to find the best means of recognizing the purity of this vegetable product.

Copaiba is not the product of a single tree, but is drawn from seven or eight species of *Copaifera* growing in America, from the Brazils to Mexico and the Antilles. Thus it happens, that this oleo-resinous balsam may vary very much in its consistence, color, odor, and even in its chemical characters and composition, and, therefore, we should be very circumspect before pronouncing it to be adulterated.

Having taken a balsam of known purity as the type of the best copaiba, and to serve as a guide in the estimation of the other sorts, he adopted the following tests in each case, as characteristic of good copaiba:—

One part of the balsam mixed with 2 parts sulphuric ether.

One part of the balsam mixed with 2 parts absolute alcohol.

One part of the balsam mixed with 10 parts spirit of wine.

One part of the balsam mixed with 2-5ths of its weight of pure strong solution of ammonia, at 60° Fahr.

One part of the balsam mixed with 1-16th of its weight of recently calcined magnesia, and triturated some time in a mortar; then introduced into a bottle, and corked.

One part of the balsam treated in the same manner, with one-fourth its weight of carbonate of magnesia.

One or two drachms of the balsam boiled in three or four pints of water, till the liquid is reduced to half a pint.

From a great variety of samples, all treated in the same manner, the Professor deduces the following conclusions:—

1. A copaiba which possesses the four properties :—*First*, of being entirely soluble in two parts of absolute alcohol. *Second*, to form at the temperature of 60° Fahr. a transparent mixture, with two-fifths of its weight of a strong solution of ammonia. *Third*, to solidify with one-sixteenth its weight of calcined magnesia. *Fourth*, to produce a dry and brittle resin after prolonged ebullition with water, is a balsam which is certainly pure ; and those which present these four properties are to be preferred to all others.

2. The last character is an indispensable complement to the three first, which alone are not sufficient to certify the purity of the balsam. On the other hand, one or two of the first characters may be wanting, without necessarily involving the adulteration of the balsam. When these characters are wanting, we must try to discover the presence of some foreign substance ; but unless we can prove its presence, we must not conclude that the balsam has been adulterated—it may arise from some unknown properties in the variety of the tree from which it is produced.

3. The characters drawn from the action of ammonia, and of calcined and carbonate of magnesia, and which have been regarded as the most certain means of detecting the adulteration of copaiba by a fixed oil, are far from possessing that value which has been assigned to them. The soft state of the resin of copaiba, deprived of its volatile oil by boiling in water, is a much more certain test of this falsification.—*Annals of Pharmacy*, Jan. 1853, from *Journal de Pharmacie*.

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#### ON SABADILLINE.

By FR. HÜBSCHMANN.

It is known that Couërbe has discovered in sabadilla seed, besides veratrine, a second organic base, which he has named sabadilline. He obtained it by boiling the impure veratrine, precipitated by potash or soda, with water, from which it crystallizes out by cooling. E. Simon afterwards regarded this sabadilline of Couërbe as a double compound of resin and soda with resinous veratrine, from whose solutions in sulphuric acid, pure veratrine could be precipitated by means of ammonia.

The author now shows, by the following research with a body



which he has obtained, by treating his veratrine with ether, as a residue, that this residue is sabadilline, and thus proves the existence of this alkaloid.

Sabadilline is a white amorphous powder, which, when rubbed in a mortar, does not cause sneezing; whereas, veratrine, as is well known, irritates the nose.

Sabadilline is only taken up as a trace by ether, whilst veratrine is extremely soluble therein.

Sabadilline dissolves in 143 parts of boiling water. This solution is not rendered turbid by ammonia; but very much so by carbonate of potash, which, however, precipitates only two-thirds of the dissolved alkaloid; this precipitate, by heating the solution, forms into a resinous mass. Veratrine does not dissolve in water in an observable degree.

A solution of 1 part of sabadilline in 4 parts of diluted sulphuric acid, and 100 parts of water, does not become turbid with ammonia. A similarly prepared solution of veratrine gives, with ammonia, a strong turbidity.—*Annals of Pharmacy*, Jan. 1853.

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## ON THE PREPARATION OF IODIDE OF AMMONIUM.

BY JOHN A. SPENCER.

(Read before the Chemical Discussion Society.)

The salt, iodide of ammonium, having lately been used, and, from its possessing certain advantages over the similar compound of potassium, being likely to come into more extensive use among those practising photography, I am induced to lay before the Society a method I have adopted for preparing the substance in question, of greater purity and with more facility than those processes which are given in most works on chemistry, viz., by the double decomposition of solutions of iodide of iron or zinc by carbonate of ammonia, filtering, washing the precipitate, and evaporating the solution to dryness. These methods do not usually yield an unexceptionable product, as it is generally of a yellowish color, while the pure salt is perfectly white; they also require a comparatively large quantity of water, to prevent losing much of the salt in the precipitate.

The action of iodine on solution of ammonia, differs, as is well

known, from that upon the fixed and caustic alkalies; in the latter case, an iodide and iodate of the metal is formed, which may be separated either by alcohol, which leaves the iodate untouched, or the iodate may be converted, by exposure to a red heat, into iodide. By acting on *ammonia* with iodine, only a small portion of iodide of ammonium is formed, accompanied by that most formidable substance, iodide of nitrogen, a substance whose explosive properties render it an operation of danger to prepare it in large quantities; but if, instead of using caustic ammonia, a solution of *sulphide of ammonium* be used, the reaction which ensues is perfectly safe, and gives us the salt in question very readily. The operation is very simple. A quantity of pure iodine is placed in a flask with a small quantity of water, and sulphide of ammonium added to it till the liquid loses its red color, and is turbid only from separation of sulphur; the flask is then agitated till the sulphur, for the most part, agglomerates into a mass, the liquid poured off, and, if necessary, ammonia added to it till it manifests a slightly alkaline reaction, and then boiled till all odor of sulphuretted hydrogen and of ammonia is lost, then filtered, which is done with great facility, and evaporated at a boiling heat, constantly stirring from the edges of the vessel, till it becomes a pasty mass, when it is immediately transferred to a water bath, and the stirring continued till the salt is dry. It then forms a beautifully white and crystalline powder, which will keep for some time, if carefully excluded from the air, but which, after the lapse of a few weeks, becomes yellowish, and at last brown; it may, however, be easily restored, by adding a little solution of sulphuretted hydrogen till colorless, filtering, and evaporating to dryness. By means of this process, a pound of the substance may be procured, in a perfectly pure condition, in a couple of hours, while by the old method, a much longer time would be necessary, and the product be not so good.—*Annals of Pharm.*, Jan., 1853.

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ON PHYSALINE.

By V. DESSAIGNES and J. CHAUTARD.

The bitter principle of *Physalis alkekengi* has been employed for some time with success in the treatment of fever, and the

authors have consequently attempted its isolation. Every part of the *Physalis* is bitter, especially the leaves and fruit-capsules. The alcoholic extract of the plant yielded a bitter dark-colored mass. The bitter principle is taken up by cold water, and was separated either by means of charcoal, from which it was afterwards dissolved by alcohol, or by shaking the aqueous solution with chloroform. The bitter principle thus obtained was pulverulent, slightly colored, and very bitter.

*Physaline*  $C_{28}H_{32}O_{10}$ , prepared in the last-mentioned manner, is, when pure, a white powder, with a faint tinge of yellow; its taste is at first faintly, afterwards permanently bitter; it is uncrystalline, softens at  $356^{\circ}$  or  $374^{\circ}$  F., and then soon decomposes, burning with a smoky flame. It is very sparingly soluble in cold water, to which it communicates a bitter taste; more soluble in hot water, chloroform and alcohol; and sparingly soluble in ether and acids. It is also dissolved by ammonia, and remains unaltered after its volatilization. It is not precipitated by nitrate of silver and ammonia from the alcoholic solution; it is precipitated by an ammoniacal solution of acetate of lead. Dried *in vacuo*, it gave on analysis—

Carbon, . . .	63.78	63.57	28	63.64
Hydrogen, . .	6.33	6.30	32	6.06
Oxygen, . . .	—	—	10	30.30

*Compound of Physaline with Oxide of Lead*,  $C^{28}H^{30}O^9 + 3PbO$ . —Prepared as above and dried *in vacuo*, it gave on analysis 54.34 per cent. oxide of lead; theory requires 56.70. The authors do not consider their analyses as decisive. The composition of enicine, the bitter principle of *Carduus benedictus*, approximates very closely to the above:—Carbon, 62.9; hydrogen, 6.9; oxygen, 30.2. The fruit of the *Physalis* contains citric acid.—*Ibid*, from *Journ. de Pharm. et de Chim.*, 3rd ser., vol. xxi. p. 24–27.

#### NEWLY-DISCOVERED SALT OF QUININE.

Dr. William Herapath, of Bristol, [Eng.,] in a paper communicated to the *Philosophical Magazine*, has drawn attention to the optical properties of a newly-discovered salt of quinine,



which crystalline substance possesses the power of polarizing a ray of light like tourmaline, and, at certain angles of rotation, of depolarizing it, like selenite. By dissolving the disulphates of quinine and cinchonine of commerce in concentrated acetic acid, upon warming the solution, and dropping into it a spirituous solution of iodine carefully by small quantities at a time, and placing the mixture aside for some hours, large brilliant plates of this substance were produced. Iodine, sulphuric acid, and quinine, are the constituent elements of this substance. Dr. Herapath considers it probable that these are arranged as a binary compound; the disulphate of quinine acting as a feeble electro-positive base, to the iodine as an electro-negative. He considers it, therefore, to be an iodide of the disulphate of quinine. The crystals of this salt, when examined by reflected light, have a brilliant emerald-green color, with almost a metallic lustre; they appear like portions of the elytra of cantharides, and are also very similar to murexide in appearance. When examined by transmitted light, they scarcely possess any color, there is only a slightly olive-green tinge; but if two crystals crossing at right angles be examined, the spot where they intersect appears as black as midnight, even if the crystals are not  $\frac{1}{300}$  of an inch in thickness. If the light used in this experiment be in the slightest degree polarized, as by reflection from a cloud, or by the blue sky, or from the glass surface of the mirror of the microscope placed at the polarizing angle,  $56^{\circ} 45'$ , these little prisms immediately assume complementary colors. One appears green and the other pink; and the part at which they cross is a deep chocolate or chestnut brown, instead of black. In performing optical experiments with this peculiar salt, Dr. Herapath says, that it is not necessary to employ a tourmaline; the whole phenomena may be exhibited with equal brilliancy by using two plates of iodide of the disulphate of quinine; one as a polarizer, the other as an analyzer, the selenite and disulphate of quinine being interposed. This fully establishes the fact of this substance possessing optical properties precisely equivalent to those of a tourmaline, or of a Nicol's prism, and will be sufficient to show that all the phenomena capable of being produced by the one may be exhibited by the other. Dr. Herapath further states, that this newly-



discovered substance possesses the power of polarizing a ray of light with at least five times the intensity that the best tourmaline is capable of, and that it must consequently be the most powerful polarizing substance known. In his paper in the *Philosophical Magazine*, to which I am indebted for the above information, Dr. Herapath enters at great length into the chemical characters of this iodide of the disulphate of quinine. In his examination of its optical properties, he employed one of Oberhauser's achromatic microscopes, with a half-inch object-glass and No. 2 eyepiece; a low power, under 100 diameters.—*Annals of Pharm.*, May 1852.

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#### PILLS OF IODIDE OF IRON.

By JOHN LOINES.

The intensely styptic taste of the solution of iodide of iron as well as the unpleasant stain it imparts to the teeth and lips is often felt to be a serious inconvenience in the use of this valuable remedy, and has given rise to considerable inquiry by the medical practitioner for some more palatable mode of administering the iodide. Such, however, is the nature of this compound, that it is scarcely to be expected that any form of preparation will supersede the salt with gum or the combination of saccharine matter in various proportions. Meantime it has been proposed, in order to conceal the taste of the officinal solution, to enclose it in capsules, or, by the addition of suitable substances, to make of it a mass capable of being formed into pills. It has even been thought advisable to evaporate the solution till it should acquire a suitable consistence for this purpose. To the capsules the expense will probably be urged as an objection by some, while their liability to leak, unless made with more than ordinary care, will be found a constant source of complaint. On the other hand, although it is easy enough, by the addition of gum, to make a mass that can be rolled into pills, the bulk of this adjuvant in connection with that of the sugar already employed renders the dose inconveniently large. It was in view of these objections that the writer, about a year ago, devised the plan of making a very concentrated syrup of the iodide of iron, which may be readily made into pills, two or three of which contain the

ordinary dose of that medicine, and having made use of them in his own case for a considerable time, with advantage, he would respectfully recommend them to the favorable notice of physicians and pharmacutists. The formula he employs is the following viz :

Take of iodine (dry).	. . . . .	1 oz.
fine iron wire, cut in pieces.	. . . . .	3 ℥.
Sugar in powder.	. . . . .	2½ oz.
Water.	. . . . .	1½ fl. oz.

Measure  $2\frac{1}{2}$  fluid ounces of water into a three or four ounce phial, and mark upon it the height at which the liquid stands, then pour out the water and introduce the sugar in its stead. Proceed, with the other ingredients, to make the solution of iodide of iron in the same manner as in the formula of the U. S. P. taking care to use a flask or matrass of the capacity of only 3 or 4 ounces in order to avoid waste of the materials. The filter employed should also be very small (from one to two inches in depth) and its apex must be protected by a small cap of muslin, without which a rent is almost certain to occur ; or, a small piece of fine linen or muslin might be substituted for the double filter thus formed. Having filtered the liquid into the sugar, shake the phial containing them, and suspend it in a vessel of hot water until perfect solution takes place. If the product measures less than  $2\frac{1}{2}$  fluid ounces, add simple syrup to make up the deficiency.

This concentrated syrup is four times the strength of the officinal solution, and should contain, by calculation, twenty-nine grains of the dry iodide in every fluid drachm. As some loss is, however, unavoidable, the proportion is actually rather less.

To prepare the pills, two fluid drachms of the concentrated syrup are to be triturated in a mortar, with 3 drachms of powdered gum arabic, and the mixture set aside for several hours, during which time it acquires the consistence of very stiff paste, but needs the addition of a little more gum, which should be worked in by hand, to make it into pills. When brought to the proper consistence, it is to be divided into 60 pills, each of which may be assumed to contain the equivalent of 8 minims of the officinal solution of iodide of iron. They do not become hard by keeping;

some have been kept a year, and then beaten anew into a mass and made again into pills. Neither does any perceptible alteration appear in their color, taste or smell.\*—*N. Y. Jour. Pharm.*, January, 1853.

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#### ON THE PURIFICATION OF SAL-AMMONIAC.

By HENRY WURTZ.

Many chemists must have become aware that the loaves of sal-ammoniac which occur in commerce almost invariably contain iron in some form of combination. It is the separation of this iron which is particularly to be brought under consideration in this paper. The occurrence of this contamination is not noticed by Gmelin, but I find that Pereira in his *Materia Medica*, mentions it, apparently entertaining the opinion, however, that the iron is contained exclusively in the brownish yellow layers which usually appear in a section of one of the loaves. He remarks,† “For several years past I have been accustomed to demonstrate in the Lecture-room that a solution of these yellow bands in water gives no traces of iron on the addition of ferrocyanide of potassium, until a few drops of nitric acid be added, when a copious blue precipitate is formed; and I therefore inferred that this yellow matter was a double chloride of iron and ammonium. My opinion has been fully confirmed by the experiments of Dr. G. H. Jackson.”

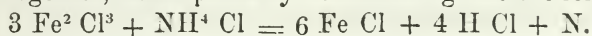
In the examination of several specimens of commercial sal-ammoniac, however, I have myself found the quantity of protochloride of iron in the transparent colorless portions of the mass to be apparently equal to that in the yellow portions. Neither the colorless nor the yellow portions give any reaction with yellow prussiate of potash or with sulphocyanide of potassium, or any precipitate upon heating with ammonia; but strong solutions of each are equally blackened by sulphide of ammonium, and after boiling with a drop of nitric acid give quite considerable and apparently equal flocky-brown precipitates of hydrated sesquioxide of iron upon heating with ammonia, and apparently

\* The reader is referred to a formula for pills of iodide of iron, suggested by Mr. H. W. Worthington, (*Amer. Jour. Pharm.*, vol. xv. p. 71) in which tragacanth and honey are employed very much in the way recommended above by Mr. Loines, for gum and sugar.—*Editor Amer. Jour. Phar.*

† Pereira's *Materia Medica*, i., 446.



about the same blue coloration with prussiate of potash, and red with sulphocyanide of potassium. The yellow substance in the colored bands I am disposed to regard as some organic matter. The iron is evidently all present in the form of protochloride, which has sublimed together with the vapor of the sal-ammoniac in the process of manufacture. In fact, judging *a priori* from the well known reducing properties of sal-ammoniac, when aided by heat, the presence of sesquichloride of iron, which, from its yellow color, and easy volatility previous to examination, would naturally be supposed present in the yellow portions, seems improbable. The reaction between sal-ammoniac and sesquichloride of iron, when heated together, would probably be something like the following:



The sesquichloride of iron being thus converted into protochloride.

Gmelin\* who does not notice the presence of iron, states that commercial sal-ammoniac may be purified both by resublimation and recrystallization. To test this, two experiments were made. First, a quantity of crude sal-ammoniac was slowly and carefully sublimed in a glass tube. An aqueous solution of the sublimate which, it is worthy of observation, had a slightly brown color, and an empyreumatic smell, when tested with prussiate of potash and sulphide of ammonium, still gave most unmistakeable indications of the presence of protochloride of iron. Next, some of the crude sal-ammoniac was crystallized from water—the crystals rinsed with distilled water and dried by strong pressure between folds of filtering paper. A solution of these crystals still gave a coloration, though faint, with sulphide of ammonium. By two or more recrystallizations every trace of iron might, in all probability, be separated, but at the expense of a large loss of material.

While an instructor in the Chemical School, connected with Yale College, at New Haven, I became acquainted with a method of separating the iron from ferriferous sal-ammoniac, devised, I believe, by Mr. Wm. H. Brewer, a former student in that institution. and in common use in the analytical department for the preparation of pure sal-ammoniac solution, for use in analysis, which leaves nothing whatever to be desired in point of economy, perfection and facility of execution; and as Mr. Brewer has never, to my knowledge, published his process, I have concluded, in view

\*Handbuch der Chemie, i., 887.



of the importance of the matter and the fact that I have myself verified the accuracy of the process by repeated trials, to make it public.

Brewer's process was founded upon the hypothesis, confirmed as above by Pereira and myself, that the iron is in the form of protochloride, and consists simply of a conversion of this protochloride into sesquichloride by passing a few bubbles of *chlorine* gas through a nearly saturated hot solution of crude sal-ammoniac, and the subsequent decomposition of the sesquichloride of iron by ammonia. The solution is then kept hot on the sand bath for a short time, or until the precipitate separates in flocks, and then quickly filtered while hot. On cooling, the sal-ammoniac crystallizes out absolutely pure.

When passing the chlorine gas into the liquid, special care must be taken to keep the liquid hot, and not to prolong the action sufficiently to allow the formation of the well known dangerously explosive compound  $\text{NHCl}^2$ ,\* usually called chloride of nitrogen. It is evident that the sal-ammoniac obtained cannot contain any free chlorine, all the chlorine introduced being converted into chlorohydric acid, which combines with the excess of ammonia, or according to the long known reaction,



#### ON A NEW TEST FOR IODIDES.

By DAVID S. PRICE, Ph. D., F. C. S.

Having in the preceding paper† pointed out the principle on which the detection of nitrites by means of iodide of potassium and hydrochloric acid depends, I shall proceed briefly to describe the application of nitrites for the detection of iodides, and at the same time give one or two instances of the practical application of the test in cases where the quantity of iodine is exceedingly small.

The method of employing the test is the following. The liquid

\*The discovery by Adolphe Wurtz, of the detonating compound formed by the action of chlorine upon ethylamine, and called by him "*l'ethylamine bichlorée*," (*Memoire sur les ammoniacques composees, par M. Ad. Wurtz, p. 33*) leaves us hardly any alternative, if we consider the perfect analogy between the two cases, than to assign the above formula to the *soi-disant* chloride of nitrogen.

†See Chem. Gazette vol. ix. p. 290.

suspected to contain an iodide is mixed with starch-paste and acidified with hydrochloric acid; a solution of nitrite of potash is then added, when, if much iodine be present, a dark blue color will be instantly produced; if a very small quantity only, as for instance the two or three millionth part, then a few seconds elapse before the blue color makes its appearance. In this manner I have detected the 1-4000,00th part of iodine dissolved in water as iodide of potassium. It will be seen that the test admits of a degree of delicacy not attainable by any of the other methods for detecting iodides, as well as being at the same time free from the disadvantages to which they are more or less subject; as, for instance, in the employment of chlorine, which, unless added very carefully to a liquid containing a trace of an iodide only, is almost sure to afford a negative result, from the chlorine combining with the iodine, and so preventing its acting on the starch. The same error may also arise by the use of nitric acid should the suspected liquid contain a large amount of chlorides.

I will now detail the two cases in which I have applied this test: in the one for the purpose of detecting iodine in cod-liver oil, the object being to see how small a quantity of the oil would suffice: in the other, for the purpose of detecting iodine in marine vegetation. One ounce of ordinary brown cod-liver oil was saponified by a concentrated solution of caustic potash, and then carbonized in an iron spoon over an open fire; the residue was removed into a covered porcelain crucible, and strongly heated, so as effectually to destroy all organic matter, and when cold was digested with a small quantity of water, and thrown upon a filter; the filtrate, being acidified with hydrochloric acid, was then mixed with starch-paste, and tested with nitrite of potash, which almost immediately produced a pale plum color.

Sea-water contains so small an amount of iodine, that it is exceedingly difficult to detect even a trace of it in the mother-liquor from several pounds of water. Minute as this quantity must be, it is nevertheless collected and assimilated by many marine plants, and the following experiments enable us to demonstrate its presence in their juices. If we take a thin transverse sectional slice of the stem of the *Fucus laminaria digitata*, moisten it with a little starch-paste and dilute hydrochloric acid, and examine it by the aid of the microscope, we shall, upon adding a drop of a solution of nitrite of potash to the same, be able

most distinctly to observe the formation of iodide of starch. The presence of an iodide may be shown in a still more marked manner, by suspending the stem of the same plant in a dry atmosphere, when the surface, after the lapse of some hours or days, will become covered with numerous transparent crystals, which on examination will be found to consist principally of chlorides, but at the same time to contain so much of an iodine compound as to impart an intense blue color to the test-mixture.

Many marine plants, when placed in a fresh state in contact with the test-mixture, impart an orange color to it, owing to the liberation of bromine.—*Quart. Journ. of Chem. Soc.*, iv. p. 155.

#### A FALSE ISINGLASS FROM PARA.

A substance has lately been imported, under the name of Isinglass, which, on examination, proves not to be isinglass, but the dried ovary of a large fish.

Two boxes were imported: they did not contain more than 14 or 16 lbs. A similar article has been before imported into London. They somewhat resemble a bunch of grapes; and consist of ovoid or rounded masses, attached by peduncles to a central axis; by immersion in water this axis is found to consist of a convoluted membrane, to one side only of which these ovoid masses are attached.

A very superficial examination of this so-called isinglass, proves that it is neither the swimming bladder of a fish, nor is it gelatinous; but it is in reality the ovary of some large fish, and is of an albuminous nature. When soaked in water its fishy odor becomes very obvious.

The ovoid masses are *ova*. They are highly vascular on the surface, and are filled with an animal substance of a yellow color. In general appearance they resemble the vitellus of a shark or ray.

The *Sudis Gyas*, a large osseous fish, upwards of six feet in length, is found at Para. Its flesh is dried, salted, and eaten by the lower classes; and its swimming bladder constitutes one of the kinds of Brazilian isinglass imported into London. It is probable, therefore, that the ovary of this fish constitutes the false isinglass in question. If not from this fish, it is probably obtained from some allied genus (as *Amia*) of highly organized osseous fishes.—*Pharm. Journ.*, Jan. 1, 1853.



## ON A NEW CRYSTALLINE BODY FROM HELLEBORUS NIGER.

BY WILLIAM BASTICK.

*(Read before the Pharmaceutical Society.)*

The natural order *Ranunculaceæ* contains a number of plants of great activity on the animal economy, and most of these employed as medicinal agents have been thoroughly examined by chemists, by whom their active principles have been separated beyond doubt. It has been found, as is well known, that these active principles are organic bases of extreme virulence, and possess the properties of the plants from which they are derived in a highly concentrated form. Black hellebore root has been several times examined for the purpose of ascertaining what were its active constituents, and more especially to learn whether, like other members of this family, it contained an organic base. Vauquelin ascribed its activity to the presence of an acrid oil, and Gmelin to a soft resin which exists in it. The most recent and complete examination of black hellebore root is that of MM. Feneulle and Capron, whose researches were principally directed to prove the absence or presence of an alkaloid in this root. However, they came to the conclusion that no such body existed in it, and that its activity was due to a combination of a fatty oil with a volatile acid, which they separated from it. Doubting the truth of their conclusions, and reasoning from analogy, I was led to believe that, by the improved methods of research of the present day, an organic base might be extracted from it. I therefore adopted a method which experience has shown will eliminate an alkaloid from any substance, if any such alkaloid, soluble in ether, exist therein, and which is as follows:—

The black hellebore root was finely bruised, and macerated with alcohol, containing 1-50th part of strong sulphuric acid. After three days, the tincture was filtered from the root, and supersaturated with calcined magnesia. The liquid was then filtered, and sufficient sulphuric acid added to it to render it slightly acid. It was again filtered, to remove the sulphate of magnesia formed. The filtrate was now mixed with twice its volume of distilled water, and the mixture evaporated, to expel the alcohol, and to reduce considerably the bulk of the solution. To remove the soft resin, which was separated by replacing the alcoholic menstruum with water,



filtration was resorted to. The concentrated fluid was then carefully saturated with carbonate of potash, but nothing was precipitated. A large excess of that carbonate was now added, and the solution agitated for some time with four times its volume of ether, and afterwards set aside, so that the ethereal part of the liquid might separate from the watery portion. When this separation had taken place, the ethereal portion was removed from the bottle by means of a pipette, and exposed to spontaneous evaporation in a capsule. Had an organic base been present in the root, it would have been found in the ethereal solution; but this solution was entirely free from any reaction on litmus paper. Thus far my experiments corroborate those of MM. Feneulle and Capron, as to the non-existence in black hellebore root of any body having the more distinct characteristics of an alkaloid, but no further; for I found in the ethereal solution, by its evaporation, a well-defined *crystalline* organic body, to which I propose giving the name of *helleboline*; although that name has been already given to the soft resin by Gmelin, and undeservedly so, as I think, because it possesses no peculiarities, either physical or chemical.

This new body readily separates, by evaporation, from its watery alcoholic and ethereal solutions, in white translucent crystals. It is slightly soluble in water, more soluble in ether, and readily soluble in alcohol. It dissolves more freely in these liquids when they are heated. It is bitter to the taste, and produces on the tongue a tingling sensation, like the root. Strong sulphuric acid decomposes it, and gives with it a reddish-brown solution, which, when diluted with water, affords a brown precipitate. Concentrated nitric acid dissolves it; but does not oxidize it until the solution has been exposed to heat. After it had been thus oxidized, the usual tests showed that oxalic acid was not one of the products. This substance is not volatile, and when heated, is decomposed and leaves a carbonaceous residuum, but does not inflame. It is, as previously indicated, entirely without reaction on litmus paper, and does not combine with or saturate acids or alkalies. A dilute solution of caustic potash appears to produce no change in it, as is also the case with dilute mineral acids. It is not precipitated from its solutions by acetate of lead, bichloride of mercury, or iodide of potassium. When heated in a dry state with fused caustic potash in

a tube, ammonia is evolved, which shows that it is a nitrogenous body. It therefore closely resembles piperine in many of its properties, which is classed amongst the alkaloids, although, like helleborine, it is devoid of alkaline reaction ; but whether it possesses an elementary constitution similar to that of piperine, or the alkaloids in general, remains to be determined by ultimate analysis.

Having so far endeavored to learn its characters, I proceeded to ascertain if this new body could not be extracted from black hellebore root by a more simple process. I treated the bruised root with alcohol, to form a strong tincture. The filtered tincture was diluted with water, and heated for some time, to expel the alcohol. The aqueous solution was then filtered, to remove the separated resin, and afterwards further evaporated, when some helleborine crystallized out of the solution ; but in a less pure condition than by the former process. Consequently, I treated the solution with carbonate of potash in excess, and agitated it with three or four times its volume of ether, which extracted the helleborine almost in a state of purity. This substance may be further purified by solution in alcohol, and recrystallization.

It is probable, from this latter process, that helleborine exists in an uncombined state in the root, and that it is the soft resin contained therein which chiefly interferes with its extraction and recognition by a simple solvent as a crystalline substance. There is also a free acid in black hellebore root, which it is necessary to neutralize with a base before the helleborine is extracted from its aqueous solution with ether, as it contaminates the product. This is not gallic acid, which is said to exist in this root, according to the analysis of MM. Feneulle and Capron, as it did not give a black precipitate with a persalt of iron, but a brown gelatinous one ; it also afforded white precipitates with acetate of lead, and with nitrate of silver. Neither is it the volatile acid found by them, as it is not expelled from its solutions by long boiling. It seems to resemble closely the aconitic acid found in another member of the natural order *Ranunculaceæ*, especially when it is remembered that, like that acid, it is soluble when free in alcohol, ether, and water.

It may be mentioned that, in consequence of the insolubility in ether of the coloring matter extracted by alcohol from black helle-

bore root, it is scarcely necessary to use animal charcoal to decolorize the helleborine, as its ethereal solution is colorless in the above process, and this substance crystallizes thereout, with care, nearly in the same condition.—*Annals of Pharmacy*, Dec. 1852.

## NOTES UPON THE DRUGS OBSERVED AT ADEN, ARABIA.

BY JAMES VAUGHAN,

Member of the Royal College of England, Assistant Surgeon in the Bombay Army, Civil and Port Surgeon at Aden, Arabia.

*Communicated by Daniel Hanbury.*

GUM ARABIC, *Gummi acaciæ*, known in Arabia and on the African coast by the name of *Sumgh*. The acacia which yields this gum is generally a small shrub of a dry and withered appearance; occasionally, however, it shoots out into a tree of from twenty to thirty feet high. The Somalis on the north-eastern coast of Africa collect the gum during the months of December and January. The process of obtaining it is extremely simple: long incisions are made in the stem and branches from which the juice flows, and when dry, is removed. After the gum of a district has been gathered, it is sewn up in goat-skins, and brought on camels to the great Berbera fair, or to some of the small settlements on the coast, and thence shipped for Aden and India. Three descriptions of the gum, styled severally *Felick*, *Zeila*, and *Berbera*, are exported from the Somali coast.

1. *Felick Gum* is collected chiefly by the Magartain\* Somalis and those who inhabit the district of Gardaf or Cape Gardafui. None of this quality, which is esteemed the best, finds its way to Aden; a little reaches Maculla and Shehr on the Arabian coast, but the mass is usually bought up by the Banians,† and shipped direct for India. The *Gum Felick* realizes about twenty-five rupees‡ the hundredweight in the Bombay market.

2. *Zeila Gum*, so called from the port of that name, and

3. *Berbera Gum*, from the district of Berbera. The former of these is sold for fifteen, and the latter for thirteen rupees the hundredweight in the Bombay bazaar.

The acacia is common throughout Yaman and Hadramaut, but

\* Otherwise *Meggertein*, or *Mijjertheyn*.—D. H.

† Hindoo Merchants.

‡ The rupee is equal to two shillings sterling.



the Arabs do not appear to appreciate the shrub, as but very little gum is collected by them. The gum forms, however, an important ingredient in the preparation of their writing-ink, to which it gives that glossy appearance so much admired in old Arabian manuscripts. They also use it occasionally as a demulcent and nutrient, and give it in the form of mucilage to invalids, as we do arrowroot, sago, &c. The Somalis resident at Aden occasionally go a short distance into the interior and gather small quantities, which they immediately sell in the bazaar. The natives on the south-east coast of Arabia between Aden and Maculla also collect a little, but of this scarcely any is exported. During the past year (1851) 250 tons of Gum Arabic passed through the Aden custom-house. The selling price here is from  $2\frac{3}{4}$  to 3 rupees the *maund* of twenty-eight pounds.

MYRRH.—This gum-resin, sometimes called *Murr* by the Arabs, but more commonly in this district by the Indian name of *Heera Ból*, is collected in great quantities by the Somalis in the north-east part of Africa and in the neighbourhood of Hurrur further south. It is generally brought to the large fair held at Berbera, during the months of November, December and January, and is there bought up for the most part by the Banians of India, and paid for principally in piece goods: barter, indeed, is the system upon which most commercial transactions are carried on in that district. Occasionally, the articles obtained are carried thither direct; but more frequently they are first brought over to Aden, and thence shipped for Bombay. Within the last few months, small quantities of the best description of myrrh have been collected in a district forty miles to the east of Aden, and brought hither for sale.\* This has been done by the Somalis; but there can be little doubt that as soon as the native Arabs become acquainted with this valuable product of their country, the trade therein will considerably increase.

\* This information which I give from personal knowledge, may serve to correct a statement made by Dr. Malcolmson and reproduced in Royle's *Manual of Materia Medica*, that "there is no myrrh produced in Arabia." And I am further of opinion, notwithstanding the late researches of Dr. Carter, who fixes the limit of the Libanophorous regions of Ptolemy to  $52^{\circ} 47'$  east longitude, and expresses his belief that the myrrh-tree does not exist there, that further investigations eastward from Aden will eventually substantiate the fact recorded by Theophrastus in his *Historia Plantarum*, lib. ix. cap. 4, that the frankincense and myrrh trees were seen growing together in Southern Arabia.



Four hundred and fifty hundredweights of myrrh passed through the Aden custom-house last year, some of which was taken to America by American vessels, but the greater part was shipped for Bombay. The selling price here is  $9\frac{1}{2}$  rupees the *maund* of twenty-eight pounds.\*

BISSA BÔL (Arabic), *Hebbakhade* of the Somalis.—This is the name of another gum-resin which is collected by the Somalis on the opposite coast and brought hither for sale or exportation. In appearance it resembles the myrrh already described; and the natives tell me that the tree from which it is obtained also resembles the Hears Bôl tree, but is nevertheless a distinct variety. I have not met with any description of this gum, and my impression is, that the tree which produces it is yet unknown to Europeans. It is brought over with the myrrh and other gums by the Somalis, but does not appear to be very plentiful, as I find that only seventy *maunds* passed through the custom-house last year. Here it realizes  $2\frac{1}{2}$  rupees per *maund*, and is sent from Aden to India and China, where it is mixed with the food given to milch cows and buffaloes, for the purpose of increasing the quantity and improving the quality of the milk. It is also used as a size, and when mixed with lime, it is said to impart a bright gloss to walls which are covered with it. I am not aware to what other purposes it may be applied; possibly it may possess other useful properties, with which the natives are unacquainted. So far as my information extends, none of this particular gum has yet found its way to Europe.†

\* Specimens of two kinds of myrrh have been received from Mr. Vaughan. One, labelled *Somali* or *African Myrrh*, is the so-called *Turkey Myrrh* of commerce. The other, which is that produced forty miles to the eastward of Aden, is a gum-resin distinctly different, and, as the author suggests in another communication, doubtless the produce of some other tree than that affording common myrrh. It is in irregular pieces, varying in size from that of a walnut to less than that of a pea, not coated with dust like pieces of Turkey myrrh, but having a somewhat shining exterior. Each large piece appears to be formed by the cohesion of a number of small, rounded, somewhat transparent, externally shining, tears or drops. The fracture much resembles that of common myrrh, but wants the semicircular whitish markings. In odor and taste it agrees closely with true myrrh. Portions of a semi-transparent brown, papyraceous bark are occasionally attached to pieces of it. I have recently noticed a small quantity of this myrrh in the hands of a London drug broker.—D. H.

† This substance of which the author has forwarded a fine specimen, is usually regarded in England as a species of myrrh of inferior quality. It

HOTAI is the name of a gum produced by a small thorny tree which grows in the Somali country about Bunder Murayeh. The tree or shrub is in appearance not unlike that which produces the myrrh, and attains the height of about six feet. The use of the gum, as far as I know at present, is confined to the Somalis themselves, and more especially to the females, who consider it a good deterrent for the hair, and almost the only one they know or ever use. When steeped in fresh water, it yields a slight lather.\*

OLIBANUM, styled *Lubân* by the Arabs and by the Somalis on the opposite coast, where the tree affording it grows in abundance. I believe that Olibanum is also known in Persia and in many parts of India under the name of *Kundor* and *Koodricum*, but not by the Arabs or Somalis. The *Lubân* tree is a native of the eastern coast of Africa, and flourishes on the high lands which intersect the whole of the Somali country, where I had an opportunity of seeing it in 1843, not far from Cape Gardafui. The hill-ranges on the eastern coast of Africa are composed entirely of white limestone, in some parts so compact as to resemble alabaster. This appears to be the soil most genial to the tree, and in no instance did I find it growing in sand or loam as has been supposed was the case. The tree is first met with a few miles inland from the coast, and at an altitude of about three hundred feet above the level of the sea. Its appearance is strikingly singular, seeming at first

was formerly known as *East Indian Myrrh*, but is now seldom so distinguished. A package from Bombay has been offered in the London market this year as *Gum Bhesaboll*. Bissa Bôl is the *Myrrha Indica* of Drs. J. and E. Martiny (*Encyklopädie der Medicinisch-pharmaceutischen Naturalien und Rohwaarenkunde*, band 2, p. 98'), as I found by a comparison with specimens in the possession of Dr. Julius Martiny. It is quite distinct from Indian and African Bdellium—D. H.

\* *Gum Hotai*, judging from the sample sent to England by the author, consists of irregular pieces  $1\frac{1}{2}$  to 1 inch in their longest diameter, frequently rounded on one side, as if portions of large tears, of entire smaller tears, and of angular little fragments, produced by the fracture of the masses. It is of wax-like opacity, cracked in all directions, and readily breaking up into angular pieces. On the exterior, the larger pieces are yellowish, brownish, or somewhat liver-colored, and occasionally, incrustated on one side with a reddish sand, upon which they appear to have fallen when in a soft state. Internally, the colors are generally paler or nearly white, sometimes darker toward the centre of the tear. The gum is nearly inodorous, but in taste is slightly bitter and acrid to the throat. A few fragments agitated with water in a vial speedily afford an emulsion which remains frothy and milky for many days.—D. H.

sight to be destitute of roots, and clinging to the hard, uncreviced rock by masses of rhomboid and fantastically-shaped wood with the most obstinate adherence. The stem is nearly at right angles with this substructure, ascending almost invariably in an upright direction, and attaining the height of from twelve to fifteen feet. At the base the circumference is equal to that of a man's thigh, gradually tapering towards the top where it shoots off its branches and leaves. The wood is white, fibrous and somewhat soft; the bark, which is about half an inch in thickness, is of a light brown color, very succulent and covered with a glossy cuticle. This usually bursts or cracks with the natural increment of the tree, and may then be removed in cutaneous flakes, when it presents an appearance not unlike that of prepared oil-paper, and something akin to a similar coating observable on the English birch. The old and decayed portions of the tree assume a cinereous hue, whereby they are easily distinguishable from the younger and more healthy plants. At the proper season, incisions are made in the stem, from which the juice flows forthwith in a copious stream (frequently covering the entire stem) until the wounds are closed by the dessication of the fluid into a gum. In this state the trees glisten in their rich investure; and, as if vexed at being prevented from pouring forth all their store, the bark distends from the abundance of sap within. After the juice is inspissated and dried by the action of the atmosphere and the sun, it is scraped off the trees and the ground beneath, and collected by the natives, who store it in large loose heaps at particular places on the sea-coast. It is then packed in sheep and goat-skins, each parcel weighing from about twenty-eight to forty pounds, and transported on camels to the great fair held at Berbera, from whence it is either sold and then shipped in native vessels for Aden and other ports on the Arabian coast, or exported to the same places for sale. Sometimes, however, it is purchased by the Banians, and sent directly to the Bombay market in *baggalas*.\*

The following are the different kinds of *Lubán* imported for sale into the Aden bazaar.

\* *Buggalow* or *Bugalow* (?), an Arab ship employed in carrying on the trade between Bombay, the Malabar coast and the Persia and Arabian Gulfs.  
—D. H.

1. *Lubán Mattee*, so called from Bunder Mattee the port from whence it comes. This gum is collected chiefly by the Abardagahala tribe of Somalis. The season for piercing the trees, from which it is procured, is during the north-east monsoon in the months of July and August.

2. *Lubán Hunker*, or *Aungure*, from the country of Dour Mahamed and Abardagahala Somalis, is so called from Bunder Aungure whence it is principally exported. Large quantities of this description of frankincense are brought to Aden; when picked and garbled, it sells in the market for  $1\frac{1}{2}$  dollars the *maund* of twenty-eight-pounds. Ungarbled, the usual price for the same quantity is three-quarters of a dollar.

3. *Lubán Makur*, from the seaports of Ras Kurree, Khor Bunder, Alholu, Murya and Bunder Khasoom, in the country of the Worsungali and Meggertein tribes of Somalis, who inhabit the extreme north-east coast of Africa about Cape Gardafui. The natives collect this gum in the months of May, June, and July. When picked, it realizes  $1\frac{1}{2}$  dollars per *maund*; if not picked, about half that sum. Very little of this quality of gum finds its way to Aden; almost all is taken to Maculla and Sehr on the Arabian coast, from whence it is shipped direct to Bombay.

*Lubán Berbera* or *Mustika*, so called from the place from which it is exported. It is collected in the district inhabited by the Ayil Yunis and Ayil Hamed Somali tribes, and upwards of 3000 *maunds* are annually sent out of the country. This quality of gum is generally garbled before it is exported, and is largely used by the Arabs in their religious services. Its price in Aden is from three-quarters of a dollar to one dollar per *maund*.

5. Arabian *Lubán*, commonly called *Morbat* or *Shaharree Lubán*. A large quantity of olibanum is also collected in the southern and south-eastern districts of Arabia, and exported from several towns on the coast between Ras Fartak and Marbat. This was the famous thuriferous region which proved the object of such diligent search in ancient times. The country still maintains its renown for the abundance of the drug which it yields and for its superior quality, though its value has sadly depreciated since the time of Pliny, who tells us that those who were employed in garbling it at Alexandria, were hoodwinked to prevent their



coveting the precious gum.\* Three *baggalas* are annually freighted from Marbat to Bombay with an entire cargo of the Arabian frankincense, which realizes a higher price in the market than any of the qualities exported from Africa.†

\* "They need not to set any keepers for to looke unto those Trees that be cut, for no man will rob from his fellow if he might, so just and true they be in Arabia. But beleeeve me, at Alexandria where Frankincense is tried, refined, and made for sale, men cannot looke surely ynough to their shops and work-houses, but they will be robbed. The workman that is employed about it, is all naked, save that hee hath a paire of trouses or breeches to cover his shame, and those are sowed up and sealed too, for feare of thrusting any into them. Hoodwinked he is sure ynough for seeing the way too and fro, and hath a thicke coife or maske about his head, for doubt that hee should bestow any in mouth or eares. And when these workmen bee let forth againe, they be stripped starke naked, as ever they were borne, and sent away. Whereby we may see, that the rigour of justice cannot strike so great feare into our theeves here, and make us so secure to keep our owne, as among the Sabæans, the bare reverence and religion of those woods."—*Pliny's Natural History*, *Holland's translation*, Lond., 1601, tome i., p. 367.

† Specimens of each of the five kinds of Olibanum above enumerated, have been received from the author:—

No. 1, called *Lubân Mattee*, is very dissimilar to any resin known in England as Olibanum. It is in stalactitic masses, which have evidently been the produce of a very copious flow of the peculiar secretion of the tree. These pieces, whose weight varies from one to three ounces, are in parts white or yellowish, and highly opaque, in other parts brightly transparent. A thin, brown, paper-like bark is occasionally adherent. The *Lubân Mattee* possesses a strong, agreeable, somewhat citron-like odor and but little taste. It is closely allied in its characters to the *Tacamaque jaune huileuse A.* of Guibourt (*Histoire des Drogues*, tome iii., p. 484), which is the *Resina anime* of the German pharmacologists. It comes also very close to the *Tacamaque jaune huileuse B.* of Guibourt, a resin of unknown origin, in scraped pieces, which is sometimes sold in London as *Elemi*. It also nearly approaches, as Professor Guibourt informs me, the *Résine de Madagascar* of his *Histoire des Drogues*, tome iii., p. 480.

No. 3, *Lubân Makur* is Olibanum in separate, opaque, yellowish, rather small tears, to which bark is frequently attached.

Nos. 4 and 5, *Lubân Berbera*, and the Olibanum collected in the southern and south-eastern districts of Arabia, consists of tears closely agglomerated together into darkish masses, many of the tears having a vitreous appearance when fractured.

Of *Lubân Hunkur* (No. 2), a small sample has been received.—D. H.

(To be continued.)

## ARTIFICIAL FRUIT ESSENCES.

BY FEHLING.

*Pine-Apple Oil* is a solution of one part of butyric acid ether, in eight or ten parts of alcohol. For the preparation of this ether, pure butyric acid must be first obtained by the fermentation of sugar, according to the method of Bensch.

“Dissolve 6 lbs. of sugar and half an ounce of tartaric acid, in 26 lbs. of boiling water. Let the solution stand for several days ; then add 8 ounces of putrid cheese broken up with 3 lbs. of levigated chalk. The mixture should be kept and stirred daily in a warm place, at the temperature of about 92° Fahr.

“The liquid thus obtained, is mixed with an equal volume of cold water, and 8 lbs. of crystallized carbonate of soda, previously dissolved in water, added. It is then filtered from the precipitated carbonate of lime ; the filtrate is to be evaporated down to 10 lbs., when 5½ lbs. of sulphuric acid, previously diluted with an equal weight of water, are to be carefully added. The butyric acid, which separates on the surface of the liquid as a dark-colored oil, is to be removed, and the rest of the liquid distilled ; the distillate is now neutralized with carbonate of soda, and the butyric acid separated as before, with sulphuric acid.

“The whole of the crude acid is to be rectified with the addition of an ounce of sulphuric acid to every pound. The distillate is then saturated with fused chloride of calcium, and re-distilled. The product will be about 28 ounces of pure butyric acid.”

One pound of this acid is dissolved in one pound of strong alcohol, and mixed with from a quarter to half an ounce of sulphuric acid ; the mixture is heated for some minutes, whereby the butyric ether separates as a light stratum. The whole is mixed with half its volume of water, and the upper stratum then removed ; the heavy fluid is distilled, by which more butyric ether is obtained. The distillate and the removed oily liquid are shaken with a little water, the lighter portion of the liquid removed, which at last, by being shaken with water and a little soda, is freed from adhering acid.

For the preparation of the essence of pine-apple, one pound of this ether is dissolved in 8 or 10 pounds of alcohol. 20 or 25 drops of this solution is sufficient to give, to one pound of sugar, a

strong taste of pine-apple, if a little citric or tartaric acid has been added.

*Pear Oil.*—This is an alcoholic solution of acetate of amyloxyde, and acetate of ethyloxyde. For its preparation, one pound of glacial acetic acid is added to an equal weight of fusel oil (which has been prepared by being washed with soda and water, and then distilled at a temperature between  $254^{\circ}$  and  $284^{\circ}$  Fahr.) and mixed with half a pound of sulphuric acid. The mixture is digested for some hours at a temperature of  $254^{\circ}$ , by which means acetate of amyloxyde separates, particularly on the addition of some water. The crude acetate of amyloxyde obtained by separation, and by the distillation of the liquid to which the water has been added, is finally purified by being washed with soda and water. 15 parts of amyloxyde are dissolved with half a part of acetic ether in 100 or 120 parts of alcohol. This is the essence of pear, which, when employed to flavor sugar, to which a little citric acid has been added, affords the odor of bergamot pears, and a fruity, refreshing taste.

*Apple Oil* is an alcoholic solution of valerianate of amyloxyde. It is obtained impure, as a bye product, when, for the preparation of valerianic acid, fusel oil is distilled with bichromate of potash and sulphuric acid. It is better prepared in the following manner :—For the preparation of valerianic acid, 1 part of fusel oil is mixed gradually with 3 parts of sulphuric acid, and 2 parts of water, added. A solution of  $2\frac{1}{4}$  parts of bichromate of potash, with  $4\frac{1}{2}$  parts of water, is heated in a tubulated retort, and into this fluid the former mixture is gradually poured, so that the ebullition is not too rapid. The distillate is saturated with carbonate of soda, and warmed, when a solution of 3 parts of crystallized carbonate of soda, 2 parts of strong sulphuric acid, diluted with an equal quantity of water, is added. The valerianic acid separates as an oily stratum.

One part, by weight, of pure fusel oil, is carefully mixed with an equal weight of sulphuric acid. The cold solution is added to  $1\frac{1}{4}$  parts of the above valerianic acid; the mixture is warmed for some minutes (not too long or too much) in a water bath, and then mixed with a little water, by which means the impure valerianate of amyloxyde separates, which is washed with water and carbonate of soda. For use as an essence of apples, one part of valerianate

of amyloxyde is dissolved in 6 or 8 parts of alcohol.—*Annals of Pharmacy, for Feb. & Dec. 1852.*

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### ON A NEW COBALT COLOR.

By M. St. EVIE,

Lecturer at the Faculty of Sciences, Besancon.

When a cold concentrated solution of nitrite of potash is added to a cold concentrated solution of nitrate of cobalt, a disengagement of binoxide of nitrogen takes place, accompanied by the deposition of an insoluble precipitate, of a peculiar yellow color. A considerable quantity of nitrate of potash is found in the supernatant liquor.

This new substance may also be produced by the following method: To the blue subsalt of cobalt, obtained as a precipitate by the addition of potash to a solution of nitrate of cobalt, add a slight excess of nitrite of potash, and allow a small stream of nitric acid to flow in by means of a pipette; in this case, also, a disengagement of binoxide of nitrogen ensues, with the formation of nitre, and the production of a yellow precipitate.

The other method is, first, to add potash in slight excess to a solution of nitrate of cobalt until the rose colored protoxide of cobalt appears, and then to pass through the resulting magma a current of binoxide of nitrogen.

The following are some of the characteristics and properties of this new body:—It is of a light yellow color, answering to the yellow in the chromatic arrangement of M. Chevreul. Its form is that of four-sided prisms terminated by triangular facets; it is insoluble in water, alcohol, and ether; partially soluble in sulphuret of carbon; neutral to litmus paper. Boiling water decomposes it out of contact of the air, with disengagement of binoxide of nitrogen; in contact of the air, vapors of nitric acid are formed at the same time the solution becomes alkaline and acquires a rose color, and the ordinary nitrate of cobalt and nitrate of potash are found in it. Suspended in water, it resists for a long time the action of a current of chlorine, and it is only in heating the mixture that decomposition takes place. Under the same circumstances, it resists equally well the action of the sulphuretted hydrogen, but hydro-



sulphuret of ammonia almost immediately causes the formation of black sulphuret of cobalt. The action of acids on this substance gives rise to a disengagement of suffocating vapors. Calcined in a sealed tube, it changes its tint, which passes to an orange-yellow. At the same time it becomes fused, and water is disengaged, together with the red fumes of hyponitric acid, and the white vapors of nitric acid. The residuum obtained is composed of sesquioxide of cobalt and nitrate of potash.

By operating in a current of nitrogen or dry carbonic acid, there are obtained in addition all the products of binoxide of nitrogen.

Lastly, under the same circumstances, but employing the elevated temperature of a bright charcoal fire to effect the decomposition of this substance, there is obtained, after the removal of carbonic acid by means of potash, and binoxide of nitrogen by sulphate of protoxide of iron, a gaseous residuum, presenting the characteristics of nitrogen.

Analysis gave the following formula for the constitution of this new color,  $Az_2 O_8$ , Cb O, K O,  $\frac{1}{2}$  H O.

It is therefore necessary, as well on account of the presence of water, as the formation of sesquioxide of cobalt by calcination, to double the above formula, which thus becomes  $2 (Az_2, O_8, Cb O, K O) H O$  in equivalents.

*En résumé*, it thus appears that this salt must be considered as a combination of nitric and nitrous acids united to potash, water, and protoxide of cobalt. This is, at least, the most simple description of it, resulting from an examination of its mode of production, &c.

On account of the great beauty of its color, and its capability of resisting the ordinary agents of oxidation and sulphuration, M. St. Evie is of opinion that this color may be successfully employed in painting. Experiments which have been made on this point during the last twelve months, the particulars of which are in the hands of M. Chevreul, tend to show that it may be employed, without undergoing any change, both in oil and water painting. Several artists have used it, and it is very probable that the color will prove an addition to the fine arts.—*Annals of Pharmacy*, Dec. 1852.

## RESEARCHES ON PYROXYLINE.

BY A. BECHAMP.

We frequently encounter difficulties, in preparing soluble pyroxyline. In obtaining that employed by me, I followed the process of MM. Gaudin and Mialhe. I have ascertained that if the mixture of sulphuric acid and nitre be cooled previously to the immersion of the cotton, the pyroxyline obtained is strongly fulminating, but insoluble in ether. On recommencing the same operation with the same materials, but at the temperature naturally developed by the reaction, the product obtained was both fulminating and soluble. Again, the insoluble pyroxyline formed in the first operation became soluble after being immersed in the hot mixture of the acid and nitrate.

The condition necessary for constantly obtaining soluble pyroxyline is therefore to operate whilst the mixture is hot.

When a stream of ammoniacal gas is passed, for at least half an hour, through a solution of 2 parts of pyroxyline in 30 parts of alcohol of spec. grav. 0.845, the viscous solution becomes perfectly fluid.

In this ammoniacal solution, sulphuretted hydrogen gas produces a yellow precipitate, which is insoluble in alcohol of spec. grav. 0.833. This precipitate is complex; it contains a portion which is, and another which is not soluble in water. According to some of its reactions, I thought it like a sulphuretted compound.

When the ammoniacal solution is poured suddenly into 15 or 20 times its volume of water, a white powder, completely insoluble in water, is precipitated; it is not altered by remaining for forty-eight hours in water. Its properties are as follows:—

Dried at 68° F. *in vacuo* over sulphuric acid, it is very persistent. It is light, inodorous and tasteless. It becomes electric by friction. Heated in a tube, it does not fulminate so soon as pyroxyline; it evolves nitrous vapors, and leaves a residue of carbon. Heated with fuming muriatic acid, it is gradually dissolved, disengaging chlorine in abundance. Concentrated sulphuric acid dissolves it, without apparent disengagement of gas. The nitro-sulphuric mixture does not appear to produce any change in it. I have not yet ascertained whether or not the pyroxyline was regenerated.

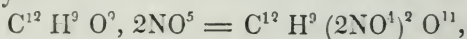
The water in which the precipitation takes place contains nitrate of ammonia, but very little organic matter. This fact deserves attention. The elementary analysis shows, in fact, that the new combination only differs from pyroxyline by containing 1 equiv. less nitric acid.

I have ascertained that the new substance is constant in its composition. I have analysed the product immediately after its precipitation, and also after forty-eight hours' contact with water. The composition did not vary.

In six analyses for the determination of the carbon and hydrogen, and three others in which I determined the nitrogen by the process of M. Dumas, I obtained concordant results; the average of the four elements is in hundredths,—carbon, 28·216; hydrogen, 3·575; nitrogen, 10·777; oxygen, 57·432. The substance had been dried at 212° F. Taking into consideration the formation of nitrate of ammonia in the reaction, and admitting the formula attributed to pyroxyline by M. Pelouze, (*Comptes Rendus*, xxiv. p. 2,) namely,  $C^{24} H^7 O^{17} 5NO^5$ , the substance examined by me would be formed according to the equation—

$C^{24} H^{17} O^{17}, 5NO^5 + NH^3 + HO = NO^5, NH^4 O + C^{24} H^{17} O^{17}, 4NO^5$ . If we take this last formula for that of the new compound, its theoretical centesimal composition is,—carbon, 28·070; hydrogen, 3·315; nitrogen, 10·916; oxygen, 57·699.

Between 68° and 212° F., 100 parts of the substance lost, by the average of two determinations, 1·727 of water. This number supposing  $H = 1$ , represents 9·015 of water for the quantity of substance expressed by the formula  $C^{24} H^{17} O^{17}, 4NO^5$ , that is to say, 1 equiv. of water. The formula of the new substance, at the temperature of 68° F., is therefore  $C^{24} H^{17} O^{17}, 4NO^5, HO$ , or, dividing it by 2—



that is to say, the formula of cane-sugar, in which  $2NO^4$  takes the place of  $2H$ .

*Conclusion.*—Several formulæ are attributed to pyroxyline. The new compound, by its composition as well as by the circumstances of its formation, confirms the formula of M. Pelouze.

The following is the molecular formula which I propose for pyroxyline:— $C^{24} H^{17} X^4 O^{21}, NO^{5*}$ ;



that of the new compound, dried at  $68^{\circ}$  F., being  $C^{24} H^{17} X^4 O^{21}$ , HO; and that of the same, dried at  $212^{\circ}$  F.,  $C^{24} H^{17} X^4 O^{21}$ .

I have already commenced some experiments on the nitrated products insoluble in water which results from the action of the nitrosulphuric mixture on glucose, dextrine, gum, &c.—*Comptes Rendus*, Oct. 4, 1852, p. 473, from *Chemical Gazette*, Nov. 15 1852.

## ON THE CHEMICAL COMPOSITION OF QUINIDINE.

By H. G. LEERS.

Quinidine, discovered several years ago by Dr. Winckler, in a bark resembling Huamalies cinchona, and also in Maracaibo cinchona, has never yet been subjected to an accurate analysis, although this base appears to be daily acquiring a greater importance in relation to quinine.

In consequence of the government of Bolivia having monopolized the exportation, and by this means raised the price of *Calisaya cinchona*, (the principal material for the manufacture of quinine,) a cheaper bark is now imported under the name of Bogota cinchona,\* which contains chiefly quinidine, and but a small proportion of quinine.†

From this Bogota cinchona, large quantities of quinidine are now prepared for admixture with quinine. The proportion of alkaloids in this bark was, in two experiments, 2.61 and 2.66 per cent. It appeared, therefore, of great interest, to obtain a more exact knowledge of the chemical relations of this substance, which, in the crude state in which the author received it from Mr. Zimmer, was beautifully white and distinctly crystallized, but still not perfectly pure. It contained an uncrySTALLIZABLE, yellow-

[\* The bark here called *Bogota cinchona* is usually known in England as a Carthagena bark; and to distinguish it from the common hard Carthagena bark, it is sometimes called *fibrous Carthagena bark*. Coquette bark is one sort of this bark.—ED. *Pharm. Journ.*]

† In order to ascertain whether Bogota cinchona, like other cinchona barks, contained kinic acid, some finely powdered Bogota bark was boiled with hydrate of lime, and the obtained kinate of lime submitted, along with peroxide of manganese and sulphuric acid, to distillation, by which was obtained a liquid containing kinone.



ish-green resinous substance, together with quinine, (according to the test with chlorine water and ammonia,) and very probably, also, a third substance, containing a larger proportion of carbon.

The following operations were performed in the laboratory of Prof. Will:

In order to obtain the base in a perfectly pure state, the rough quinidine was dissolved in alcohol of 90 per cent., and the solution allowed to evaporate spontaneously in the air, when a greenish-yellowish resinous substance soon appeared on the walls of the vessel. The most beautifully formed crystals were then selected, washed with alcohol, and re-dissolved in spirit of wine, when the same greenish-yellow substance was deposited. The re-crystallization having been performed five or six times, until the yellow substance was no longer perceived, and the proportion of carbon in the base not yet proving uniform, the crystals obtained after five or six times repeated re-crystallization were finely powdered and shaken with ether, until all reaction of quinine disappeared, and the proportion of carbon remained constant.

If quinidine be dissolved in spirit of wine of 90 per cent., and the solution left to spontaneous evaporation, it forms colorless, hard prisms, shining like glass, with edge angles of  $86^{\circ}$  and  $94^{\circ}$ ; the planes of the prisms are strongly striped, these stripes being also observable on the planes of truncation of the more obtuse edges of the prism; and in the direction of the latter planes the crystals admit of perfect cleavage. The crystals are terminated by shining planes, which converge at  $114^{\circ} 30'$ , and are applied on the more acute edges of the prism.

The rather hard crystals are easily rubbed to a snow-white powder, which becomes electrical by friction. If the crystals be heated in a platinum crucible over the flame of spirit of wine, they at first retain their brilliancy and form, and fuse without decomposition, and without yielding water, at  $175^{\circ}$  C.,\* and form a clear, wine-yellow liquid, which, when cold, solidifies into a greyish-white crystalline mass. If the heat be increased above  $175^{\circ}$ , the wine-yellow fluid ignites, burns with a red, vividly flaring, strongly sooty flame, evolving at the same time an odor

\*[All the temperatures expressed in this paper are according to the centigrade scale.--Ed.]

of kinoyl and of oil of bitter almonds, and leaves behind a voluminous, easily combustible charcoal. The taste of quinidine is not so intensely bitter as that of quinine.

In order to determine its solubility, quinidine was rubbed down with water of 17° C., and shaken. 36.1 grammes of the solution left, after evaporation, 0.014 grams. of quinidine, dried at 100°; one part of quinidine, therefore was soluble in 2580 parts of water at 17°.

42.7 grms. of pure quinidine dissolved in water at 100°, and treated as before, left 0.023 grms. of quinidine = 1 part to 1858 parts of water at 100° C.

The solubility in ether was determined by shaking finely powdered pure quinidine with ether of 0.728 spec. grav. at 17°; 19.4 grms. of this solution, by evaporation yielded 0.137 grms. of quinidine dried at 100°, or 100 parts of the solution contain 0.70 of quinidine. According to Winkler, 100 parts of ether dissolve 0.592 parts of quinidine. One part of quinidine dissolves in 12 parts of alcohol of 0.835 spec. grav. at 17°.

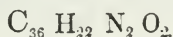
*Analysis of Quinidine.*—1. *Crude quinidine* finely powdered and dried at 100° until it lost nothing, yielded :

	I.	II.
Carbon, . . .	77.34	77.02
Hydrogen, . . .	7.86	7.90

2. *Pure Quinidine*, obtained by being four or five times re-crystallized from alcohol, finely triturated and shaken five or six times with ether, till chlorine water and ammonia produced no reaction of quinine, was washed with water and dried at 110°, till the weight remained constant. The results were :

	I.	II.	III.	IV.	V.	VI.	VII.
Carbon, . . .	76.88	76.82	76.79	76.40	76.55	76.49	—
Hydrogen, . . .	7.70	7.76	7.77	7.73	7.70	7.81	—
Nitrogen, . . .	—	—	—	—	—	—	9.99

With reference to the analysis of the salts of quinidine, and the determination of the atomic weight of the base from the proportion of platinum in the platinum double salt, the following formula is calculated for quinidine :



		Calculated.		Average of the Experiments.	
36 equiv.	Carbon, . . .	216 . . .	76.59 . . .	76.66	
22 "	Hydrogen, . .	22 . . .	7.80 . . .	7.74	
2 "	Nitrogen, . .	28 . . .	9.93 . . .	9.99	
2 "	Oxygen, . . .	16 . . .	5.68 . . .	—	
1 "	Quinidine, =	282 . . .	100.000		

If quinidine be subjected with hydrate of potash and a small quantity of water to distillation, a yellow oleaginous substance is obtained, which reacts as an alkali, and possesses all the properties of quinoline. Repeatedly washed with distilled water, it yielded a beautifully yellow oily liquid, from which muriatic acid and chloride of platinum threw down an orange-yellow precipitate, which, after having been perfectly exhausted by cold water, was dissolved in hot water. When cold, the platinum salt precipitated from the solution in the form of small orange-red needles. Dried at  $110^{\circ}$ , 0.695 grms. of the platinum salt yielded, after being burnt, 0.204 grms. of platinum = 29.35 per cent. If the formula for quinoline,  $C_{18}H_7N$ , be correct, that of the platinum salt of quinidine would be  $C_{18}H_7N, HCl Pt. Cl_2$ , and the salt would contain 29.47 per cent. of platinum.

Finely powdered quinidine dissolves in chlorine water without any particular phenomenon; quinine and cinchonine have the same relation to chlorine water. But if ammonia be added to these solutions, the cinchonine falls down from the cinchonine solution of a white color, the quinine solution becomes green like grass, and the quinidine solution remains unaltered. The reaction upon quinine becomes still more sensible by ether, if the substance to be tested for quinine be first finely powdered, then shaken with ether, and to the ether, chlorine water and ammonia be added, the least trace of quinine may be detected by the liquid becoming green. By this test, the absence or presence of quinine could very easily be detected in the preparation of the quinidine salts.

*Salts of Quinidine.*—Most of these salts are much more readily soluble in water than the salts of quinine. In spirit of wine they dissolve very easily, in ether scarcely at all. There are acid and neutral salts of quinidine, of which there are but

few which are not distinctly crystallizable; some furnish beautiful large crystals with a vitreous brilliancy. The aqueous solutions of the quinidine salts yield with potash, soda and ammonia, the mono- and the bicarbonates of the alkalies, white pulverulent precipitates, which crystallize after long standing, and are insoluble in an excess of the precipitant.

Phosphate of soda, bichloride of mercury, and nitrate of silver, yield white precipitates. Chloride of gold gives a light yellow, chloride of platinum an orange-yellow, and chloride of palladium a brown precipitate. Sulphocyanide of ammonium yields a white and tannic acid, a dirty yellow color, with the salts of quinidine.

*Neutral Sulphate of Quinidine.*—This salt was prepared by dissolving quinidine in diluted sulphuric acid, till the latter was neutralized. The neutral solution having been evaporated in the water-bath, yielded by cooling long silky shining acicular crystals, arranged in star-like groups, of sulphate of quinidine, the watery solution of which was neutral. In order to establish the solubility of this salt, the crystals were rubbed down with water of  $17^{\circ}$ , and then some time shaken. The perfectly saturated solution was afterwards filtered, 43.1 grms. of the filtrate were evaporated to dryness, and the residue dried at  $110^{\circ}$ , the result was 0.325 grms. of sulphate of quinidine. It required, therefore, 130 parts of water at  $17^{\circ}$  to dissolve one part of the sulphate.

33.5 grms, of a solution saturated at  $100^{\circ}$ , yielded, after being evaporated and dried at  $100^{\circ}$ , 1.904 grms. of the salt = one part of the salt in 16 parts of water. Sulphate of quinidine dissolves very readily in alcohol, but is almost insoluble in ether. Analysis of 100 parts :

	Found.				Average.	Calculated.
	I.	II.	III.	IV.		
Carbon, . .	64.70	64.79	—	—	64.75	65.25
Hydrogen, .	7.18	6.91	—	—	7.05	6.95
Sulphuric acid,	—	—	11.99	12.02	12.01	12.08

Corresponding formula :  $C_{36} H_{22} N_2 O_3 SO_3 HO$ .

*Acid Sulphate of Quinidine.*—The salt was obtained by adding to the neutral sulphate as much acid as it already contained

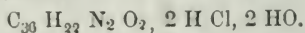


The clear, very acid, and strongly opalizing solution was evaporated in the water-bath, and then placed under the air-pump, over sulphuric acid. After the solution had arrived at the consistency of a syrup, and had assumed an intensely brown color, a crystalline mass of rather thick asbestos-like needles of a slight yellow color was formed. These crystals, after being removed from the mother-liquor, were washed with a mixture of alcohol and ether, and pressed between folds of filtering-paper, which did not deprive them of their yellow color. The proportion of sulphuric acid in the salt varied considerably several times, which arose very likely from the presence of some neutral sulphate, and for this reason no analysis is given.

*Neutral Hydrochlorate of Quinidine.*—Pure quinidine was finely powdered and mixed with water, then as much muriatic acid added by drops with the addition of heat, till the whole of the quinidine was dissolved, and the solution was neutral to test-paper. By the spontaneous evaporation of the solution the muriate of quinidine was obtained in the form of large rhombic prisms of a vitreous lustre. The mother liquor yielded no crystals, even after having been evaporated to the consistency of a syrup and left standing for several weeks in the dry air. The solubility was determined by rubbing down the crystallized salt with water at  $17^{\circ}$ , and shaking, till the latter took up no more salt. Of the filtered liquid 7.067 grms. were evaporated, and the residue dried at  $100^{\circ}$ , weighed 0.252, = 1 part of the salt, therefore, required 27 parts of water. Alcohol dissolves the salt very easily, ether scarcely at all. Analysis showed in 100 parts:

	Found.				Calculated.
	I.	II.	III.	IV.	
Carbon, . .	64.57 . .	64.11 . .	— . . .	— . . .	64.19
Hydrogen, .	7.28 . .	7.06 . .	— . . .	— . . .	7.13
Chlorine, .	— . .	— . .	9.95 . . .	10.16 . . .	10.25

Corresponding formula:



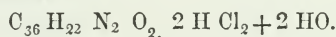
*Acid Hydrochlorate of Quinidine.*—To the last salt as much muriatic acid as it already contained was added, and the solution, left to evaporate spontaneously, yielded beautiful, large, slightly

yellowish crystals, which are monoklinometric, and have the appearance of rhombic prisms.

Perfectly dried over sulphuric acid at  $100^{\circ}$ , the acid muriate of quinidine lost 5.8 per cent. of water. It is easily soluble both in water and spirit of wine. In 100 parts were :

	Found.			Calculated.
	I.	II.	III.	
Carbon . . .	58.30 . . .	— . . .	— . . .	57.93
Hydrogen, . .	7.12 . . .	— . . .	— . . .	6.97
Chlorine, . .	— . . .	18.96 . . .	19.00 . . .	18.99

Corresponding formula :



*Platinum-Chloride of Quinidine.*—The most beautiful crystals of the muriate of quinidine were dissolved in water, the solution diluted, acidulated with muriatic acid, and chloride of platinum added as long as a precipitate was obtained. The orange-yellow precipitate was then placed on a filter and washed with acidulated water till chloride of platinum was no longer detected in the washings. The precipitate dried at  $100^{\circ}$ , was burnt, and gave the following results. In 100 parts were :

	Found.			Average of experiments calculated.
	I.	II.	III.	
Platinum, . .	27.05 . .	27.17 . .	27.13 . .	27.11 27.04

These numbers correspond to the formula :



*Mercury-chloride of Quinidine.*—Pure quinidine was dissolved by the aid of heat in alcohol of 85 per cent., acidulated with muriatic acid and an equal weight of bichloride of mercury dissolved in ether, added to the solution. When the mixture had become cold, the mercury-chloride of quinidine was obtained in the form of small scaly pearly crystals, which dissolved with great difficulty in water. The crystals were placed on a filter, thoroughly washed and pressed between folds of filtering-paper; when dried over sulphuric acid they lost no water at  $110^{\circ}$ .

In 100 parts were :

	Found.					Calculated.
	I.	II.	III.	IV.	V.	
Carbon,	34.77	.. — ..	— ..	— ..	— ..	34.52
Hydrogen,	4.01	.. — ..	— ..	— ..	— ..	3.38
Quicksilver,	—	.. 31.98 ..	31.91 ..	— ..	— ..	31.97
Chlorine,	—	.. — ..	— ..	22.60 ..	22.31 ..	22.63
Corresponding formula :						
$C_{36} H_{22} N_2 O_2, 2 Cl, 2 Hg Cl.$						

*Nitrate of Quinidine.*—If pure quinidine be dissolved by the aid of heat in moderately diluted nitric acid until the solution is neutral to test-paper, and the strongly opalizing mixture evaporated over sulphuric acid, the nitrate of quinidine crystallizes after some time in beautiful large warty crusts, resembling enamel. If the mother liquor be allowed further to evaporate, a hemispherical white mass, resembling wax, forms on the surface, whilst the liquid becomes slightly green. This salt readily dissolves in water.

*Chlorate of Quinidine.*—By the mutual decomposition of neutral sulphate of quinidine and chlorate of potash, this salt was obtained in a perfectly pure state after having been recrystallized from alcohol of 90 per cent. It forms long, white silky prisms grouped in tufts. By a gentle heat it fuses into a transparent mass, but explodes very violently at a higher temperature.

*Hyposulphite of Quinidine.*—It was obtained by the mutual decomposition of neutral sulphate of quinidine and hyposulphite of soda. When the solution cools, the hyposulphite of quinidine crystallizes in thin, long, asbestos-like needles. In water this salt dissolves with some difficulty, but is very soluble in ether.

*Fluate of Quinidine.*—Pure quinidine in fine powder was suspended in water and placed in an apparatus for the development of fluoridic acid; after some time, the quinidine contained in the water entirely dissolved, and a clear, intensely acid, slightly opalizing liquid was obtained. The solution was left to spontaneous evaporation, and yielded a mass of fluuate of quinidine, consisting of white, silk-like crystalline needles, which dissolved with great readiness in water. Upon the addition of chloride of calcium a precipitate was formed, which was insoluble in acetic acid.

*Acetate of Quinine.*—This compound is obtained by dissolving

by the aid of heat, finely powdered quinidine in acetic acid. When cold, the acetate of quinidine appears in the form of thin, long silky needles, which do not easily dissolve in cold water. When dried, the salt easily loses part of its acid. On removing the first crystals, and allowing the mother-liquor to evaporate spontaneously, a salt crystallizes from it, consisting of a mass of semi-globularly grouped, small pointed needles, having an appearance of porcelain. This salt is by far more soluble in water than that above mentioned.

*Oxalate of Quinidine.*—If an alcoholic solution of oxalic acid be added to an alcoholic solution of quinidine with the application of heat, till the liquid is neutral to test-paper, the oxalate of quinidine crystallizes from the solution after the latter has become cold, in the form of long, white, silky needles, which dissolve with great difficulty in water. From the spontaneously evaporated mother-liquor a salt in the shape of warty crusts, with an opaque white appearance, crystallizes, which dissolves with less difficulty in water.

*Tartrate of Quinidine.*—With tartaric acid quinidine forms two compounds, which appear to possess great resemblance to the oxalates. On saturating tartaric acid with quinidine, at a boiling heat, a salt separates, when the solution cools, in the shape of small pearly needles, which dissolve, but with great difficulty, in water. The solution of neutral tartrate of quinidine having been allowed to evaporate spontaneously, yielded beautiful vitreous needles, and, by the further evaporation of the mother-liquor, small, semi-globular, white, opaque shining crusts of small needles appeared.

*Citrate of Quinidine* was obtained by saturating pure quinidine with pure citric acid at a boiling heat. From the cold neutral solution of the citrate of quinidine, small, but slightly glittering needles crystallized, which did not easily dissolve in water.

*Formate of Quinidine*, obtained by saturating the pure aqueous formic acid with quinidine. The salt forms long, beautiful, silky needles, readily dissolving in water.

*Butyrate of Quinidine.*—Aqueous butyric acid was saturated with an alcoholic solution of quinidine. The salt crystallized from the neutral solution in large warty crusts resembling



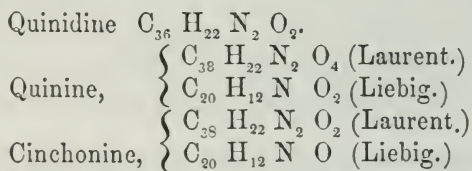
porcelain. It is very soluble, and smelt strongly of butyric acid.

*Valerianate of Quinidine.*—Aqueous valerianic acid being saturated with an alcoholic solution of quinidine, and the neutral solution left to spontaneous evaporation, the salt soon appeared in the shape of warty crusts, in the centre of which was a lighter body of radiating structure. The salt smelt strongly of valerianic acid. The solution of the valerianate of quinidine having been evaporated in the water-bath, the liquid assumed a brown color, emitting a penetrating odor of valerianic acid, whilst at the same time oily drops were evolved.

*Kinate of Quinidine.*—Pure kinic acid, dissolved in water, was saturated whilst heated with quinidine. The spontaneously evaporated neutral solution yielded a white milky mass of small needles, soluble both in water and spirit of wine.

*Hippurate of Quinidine.*—Pure hippuric acid, dissolved in spirit of wine, was saturated with quinidine under the application of heat. The hippurate of quinidine crystallized from the cold neutral solution in long silky crystals, which had the appearance and shape of fern leaves. It dissolves readily in water and in spirit of wine.

In comparing the following formula for quinidine with those for quinine and cinchonine, the following relations are established :



According to this, quinidine differs from cinchonine by a lesser proportion of two atoms of carbon, whilst the equivalents of the other elements are the same. An homologous relation between these bases, which appears so very probable, cannot, therefore, be established.—*Lon. Pharm. Jour.* Dec. 1852, from *Ann. der Chem. u. Pharm., Mai, 1852.*

## NOTE ON THE PREPARATION OF LIQUID GLUE.

By M. S. DUMOULIN.

All chemists are aware, that when a solution of glue (gelatine) is heated and cooled several times in contact with the air, it loses the property of forming a jelly. M. Gmelin observed, that a solution of isinglass, enclosed in a sealed glass tube and kept in a state of ebullition on the water-bath for several days, presented the same phenomenon, that is to say, the glue remained fluid, and did not form a jelly.

The change thus produced is one of the problems most difficult of solution in organic chemistry. It may be supposed, however, that in the alteration which the glue undergoes, the oxygen of the air or of the water plays a principal part; what leads me to think this is the effect produced upon glue by a small quantity of nitric acid. It is well known, that by treating gelatine with an excess of this acid, it is converted by heat into malic and oxalic acids, fatty matter, tannin, &c. But it is not thus when this glue is treated with its weight of water and with a small quantity of nitric acid; by this means a glue is obtained which preserves nearly all its primitive qualities, but which has no longer the power of forming a jelly. Upon this process, which I communicated, is founded the Parisian manufacture of the glue which is sold in France under the title of "*colle liquide et inaltérable*."

This glue being very convenient for cabinet-makers, joiners, pasteboard-workers, toy makers, and others, as it is applied cold, I think it my duty, in order to increase its manufacture, to publish the process.

It consists in taking 1 kilogrm. [2 and 1-5th lbs.] of glue, and dissolving it in 1 litre [2 and 1-9th pts.] of water in a glazed pot over a gentle fire, or what is better, in the water-bath, stirring it from time to time. When all the glue is melted, 200 grms. [7 oz. Av.] of nitric acid (spec. grav. 1.32) are to be poured in, in small quantities at a time. This addition produces an effervescence, owing to the disengagement of hyponitrous acid. When all the acid is added, the vessel is to be taken from the fire, and left to cool.

I have kept the glue, thus prepared, in an open vessel during more than two years, without its undergoing any change. It is very convenient in chemical operations; I use it with advantage

in my laboratory for the preservation of various gases, by covering strips of linen with it.—*Chemical Gazette*, Dec. 1st, from *Comptes Rendus*, Sept. 27th, 1852.

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#### STRYCHNINE IN BRITISH BEER, PALE ALE, ETC.

Some time since, in a lecture delivered by M. Payen, at Paris, he is asserted to have stated that strychnine was prepared in large quantities in Paris, and that the French authorities had ascertained that it was destined for England, it being employed in the manufacture of the celebrated bitter beer of that country.

This statement was copied into the *Times* newspaper, and thus became universally disseminated. It was met with a decided and indignant denial on the part of the manufacturers. They invited and obtained the services of eminent analytic chemists (Professor Graham, of University College, and Professor Hoffman, of the Royal College of Chemistry,) who deny unequivocally the presence of the poison in even the smallest possible quantity. Their observations, and the mode of analysis pursued, are worthy of attention.

Strychnine, the alleged (in this instance) substitute for hop, is a fine crystallizable substance, extracted from *nux vomica*, and belongs to the class of vegetable alkaloids. Although a valuable medicine in minute doses, still, it is remarkable for its energy as a poison, and for the intense bitterness of its taste. Half a grain would poison a person, and the bitterness of the same minute quantity is perceptible in every drop of six or eight gallons of water in which it is dissolved.

“It may be stated, at once, that the quantity of strychnine which we find necessary to impart to beer the degree of bitterness possessed by pale ales, is, for a gallon of beer, one grain of strychnine, or double the fatal dose. The price of strychnine is about 16s. the ounce, which does not amount to so much as one penny per grain. Estimating the annual production of pale ale in Burton at 200,000 barrels, the strychnine required as a bitter would, however, amount to 16,448 ounces, and cost £13,158, while nobody believes that so much as 1000 ounces of strychnine are annually manufactured over the whole world. The bitterness obtained by means of strychnine is equal in degree to that of the

hop, but very different in kind, and easily distinguished when the two bitters are compared. The bitter of the hop is immediate in its action upon the palate, is accompanied by a fragrant aroma, and soon passes off; while that of strychnine is not so instantaneous; but when the impression is once communicated it is more lasting, and becomes, from its persistence, like that of a metallic salt. The bitter of strychnine is, indeed, easily distinguishable from that of the hop when deliberately tasted."

"Still, it would be highly desirable to be able to identify strychnine in beer by the actual extraction of the substance, and the application to it of a chemical test of absolute certainty. Fortunately, those poisons which have the most violent action upon the animal economy, possess often, also, the best marked reactions, or their physiological and chemical properties are equally salient. Thus arsenic and hydrocyanic acid are the most easily detected of chemical substances, and strychnine proves to be not far behind them in this respect.

"A quantity of strychnine, not exceeding one-thousandth part of a grain, is tested and recognized to be strychnine in the following manner: The powder is moistened with a single drop of undiluted sulphuric acid, and a small fragment of chromate of potass placed in the liquid. A beautiful and most intense violet tint immediately appears at the points of contact, and is speedily diffused over the whole liquid. Although most intense, the color disappears entirely again in a few minutes. The admixture of the smallest quantity of organic matter, however, interferes with the success of the process. In order to apply the test in operating upon a complex liquor like beer, the strychnine must first be extracted from the liquid, and obtained in a pure, or nearly pure, state. This difficulty, which appears at first considerable, may be readily surmounted, and the strychnine, if it really exists in beer, be separated, and its nature established in the most certain manner.

"For this purpose, two ounces of ivory black, or animal charcoal, were shaken in half a gallon of beer, to which half a grain of strychnine had been purposely added. After standing over night, the liquid was found to be nearly deprived of all bitterness, the strychnine being absorbed by the charcoal. The liquid was now passed through a paper filter, upon which the charcoal containing the strychnine was collected and drained.



“The next step was to separate the charcoal from the strychnine. This was readily effected by boiling the mixture for half an hour in eight ounces of ordinary spirits of wine, avoiding loss of alcohol by evaporation. The spirits, which now contained the strychnine, were next filtered, and afterwards submitted to distillation. A watery fluid remained behind, holding the strychnine in solution, but not sufficiently pure for the test. The final purification was accomplished by adding a few drops of potass to the watery fluid, and then shaking it with an ounce of ether. A portion of the ethereal solution evaporated upon a watch-glass left a whitish solid matter of intense bitterness, and this was recognized to be strychnine, by giving the violet tint previously described, upon the application to it of sulphuric acid and chromate of potash.”

Having thus satisfied themselves by repeated experiments on beer to which strychnine had been added, of the efficiency of the test, Drs. Graham and Hoffman proceeded to the analysis of a large number of samples of pale ale, taken indiscriminately from the supplies of some twenty manufacturers. *Not one of the varieties of beer, when tested with the greatest scrupulousness, gave the slightest evidence of the presence of strychnine.*—*Medical Times and Gazette*, May, 1852, through *Hay's Journal*, Oct. 1852.

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#### PREPARATIONS OF MANGANESE AND IRON.

M. BURIN-DUBUISSON of Lyons, who prepared most of the ferro-manganic combinations used by M. Pétrequin, has published an interesting *brochure*, in which he gives the necessary details relating to the subject. The following formulæ are extracted from it.

*Powder for Effervescing Solution of Manganese and Iron.*—Take of coarsely powdered bicarbonate of soda 20 parts; tartaric acid 25 parts; powdered sugar 53 parts; finely powdered sulphate of iron  $1\frac{1}{2}$  part; finely powdered sulphate of manganese,  $\frac{3}{4}$  part: mix carefully, and keep in well stopped bottles. A teaspoonful is mixed with each glass of wine and water drunk during meal-time.

*Pills of Carbonate of Iron and Manganese.*—Take of pure crystallized sulphate of iron 75 parts; pure crystallized sulphate

of manganese 25 parts; crystallized carbonate of soda 120 parts; honey 60 parts; water a sufficient quantity. Pills of 20 centigrammes (3 grains) are made; they keep easily, without becoming oxidized, in well-closed vessels. From two to four are given daily.

*Ferro-manganic Chocolate.*—One part of carbonate of iron and manganese is first mixed with four of sugar, and divided into large lozenges; of these, 100 parts (grammes) are mixed with 500 of chocolate paste, in the preparation of which 100 parts of sugar have been left out. This will make 800 lozenges, each of which contains about 3 centigrammes (nearly half a grain) of carbonate of iron and manganese. The chocolate decomposes the hydrated carbonate of manganese and iron of the saccharate into hydrated sesquioxide of iron and manganese; there is no metallic taste.

*Syrup of Lactate of Iron and Manganese.*—Take of lactate of iron and manganese 4 parts; powdered sugar 16 parts; rub together, and add of distilled water 200 parts; dissolve rapidly, and pour into a matras over a water-bath, containing 384 parts of broken sugar: filter the solution. This syrup contains about 15 parts of lactate of iron and 5 of lactate of manganese in 3000 parts. One or two spoonfuls are taken daily.

*Lozenges of Lactate of Iron and Manganese* are made by adding 20 parts of the lactate to 400 of fine sugar, with a sufficient quantity of water. The mass will make 840 lozenges; of which six or eight are taken daily.

*Syrup of Iodide of Iron and Manganese.*—M. Burin-Dubuisson forms a solution of iodide of iron and manganese, in the proportion of one part by weight to two of water: the proportion of the salts is about three of iodide of iron to one of iodide of manganese. Six parts of this are mixed with 294 of simple syrup; of this, M. Pétrequin gives one or two spoonfuls daily.

*Pills of Iodide of Iron and Manganese.*—Take of the official solution prepared by M. Burin-Dubuisson, 16 parts (grammes;) honey 5 parts; some absorbent powder  $9\frac{1}{2}$  parts. Divide into 100 pills. The honey and the solution are first mixed, and evaporated at first rapidly, then more slowly, to 10 parts. Then add the powder, and divide the mass into four parts, which must be rolled in powder of iron reduced by hydrogen; each of these

must then be divided on an iron plate into 25 pills, and again rolled in the iron powder. Finally, they are covered with a layer of tolu, according to M. Blancard's process.

All these preparations must be made very carefully. M. Burin-Dubuisson has ascertained that the commercial salts of manganese frequently contain copper, and even arsenic; he hence insists on the necessity of calcining the sulphate of manganese, twice, or more frequently, at a dark red heat, and of carefully testing the solution.—*Amer. Jour. Med. Sci., Oct. 1852. from Bul. de Thérap.*

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### ON A GREEN COLORING MATTER FROM CHINA.

By J. PERSOZ.

M. Daniel Kœchlin-Schone forwarded to me, last autumn, a sample of calico dyed in China, of a sea-green tint of great stability, requesting me to examine into the composition of this green color. All the attempts to ascertain the presence of either a yellow or blue, which I made with this specimen, met with no success; and I was soon convinced, by isolating the coloring matter, that this green was produced by a tinctorial substance *sui generis*. It also became evident—

1. That this coloring matter was of a vegetable origin.
2. That the stuff upon which it was fixed was charged with a large quantity of alumina and with a little oxide of iron and lime, substances the presence of which necessarily implied that the coloring matter employed had required the assistance of mordants to make it adhere to the stuff.

These results, so positive, and yet so contrary, not only to all we know in Europe with regard to the composition of greens, but also to all that has been written on the processes employed by the Chinese in dyeing this color, necessitated a closer examination on my part. I therefore had recourse to the assistance of Mr. Forbes, American Consul at Canton, to obtain a specimen of the substance. He had the goodness to send me about 1 grm. of it.

This substance is, in thin plates, of a blue color, resembling that of Javanese indigo, but of a finer grain, and differing also from indigo in its composition and all its chemical properties. On

infusing a very small fragment of it in water, this fluid soon acquired a deep blue color with a greenish tinge. On gradually bringing the liquid to boil, and immersing in it a piece of calico on which mordants of iron and alumina had been printed, a genuine dyeing took place, the portions of the stuff which were coated with alumina acquiring a sea-green color of greater or less intensity according to the strength of the mordant, those which were coated with alumina and oxide of iron becoming deep sea-green with an olive tinge, and those charged with pure oxide of iron dark olive. The portions of the calico not coated with mordant remained white.

The colors thus obtained were exposed to all the agents to which the Chinese green had previously been submitted, and behaved in the same manner. From these experiments we may conclude—

1. That the Chinese possess a coloring matter, having the appearance of indigo, which communicates a green color to mordants of alumina and iron.

2. That this coloring matter neither contains indigo nor any derivative of this dyeing principle.—*Chemical Gazette, from Comptes Rendus, Oct. 1852.*

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## Varieties.

*Meeting of German Naturalists at Wiesbaden.*—The following notice is from the London Athenæum, 1852, No. 1301, through Silliman's Journal for January, 1853. This Society, the prototype of the British Association, has just held its twenty-ninth Annual Meeting in the flourishing little town of Nassau; which was well calculated, as well from the extent of its public buildings, and their adaptation to scientific *réunions* and social purposes, as also from the geological interest and natural beauties of the surrounding country, for the accommodation and entertainment of so numerous a body of scientific strangers. A correspondent, who was present, furnished a summary to the "Athenæum," from which the following is extracted.

On the 17th of September the members began to pour into the town from all quarters of Germany; each railway train bringing its own quota of these welcome visitors, in honor of whose approach, the hotels and many of the public buildings and private houses were decked out with the national flag, waving from the doorways and roofs.

To be a privileged member of this Association, with the right of speaking and voting in the meetings, it is necessary to have written some work bearing on natural history, physics, or medicine; but to become a temporary



associate, with the right of being present as a listener merely, at all the scientific meetings, as well as of taking part in all the festive social *réunions*, is free to every one on the very moderate payment of two Russian dollars—equivalent to a dollar and a-half of our money. Hence, when the annual meeting takes place in a town like this, numbers of the middle and upper classes of inhabitants eagerly join it, as well as all scientific strangers who may happen to be in the neighborhood. The objects of the Society, like those of the British Association, are, the formation of a mutual acquaintance between the scientific men of Germany, and the facilitation of an early interchange of their ideas in reference to all new discoveries. The numbers who this year took part in the matter amounted to nearly eight hundred. Of the Germans present there were considerably more than a hundred names honorably known in the records of science, and among the foremost may be named the octogenarian Von Buch, Prof. Rose, the great analytic chemist, Von Carnall, Inspector of Mines from Berlin, Prof. Haidinger, Director of the Imperial Geological Institute, from Vienna, Nees Von Esenbeck, the great systematic botanist, Wöhler and Weber from Göttingen, Forehhammar of Stutgardt, Lehman of Hamburg, Spörex of St. Petersburg, &c. &c.

England had about twenty representatives, and France nine or ten. The names of two ladies were on the list of associates, and many others graced the galleries and side benches during the general meetings, and took seats at the festive board on the occasions of the three public dinners.

The first general meeting took place on the morning of the 18th, in the great room of the Kursaal. The proceedings were opened by the president, Dr. Frezenius, of Wiesbaden, in a brief address.

On Sunday, the 19th, a public excursion was made down the Rheingau—the railroad and steamboat being put at the disposition of the learned strangers gratuitously; and on two subsequent days *fêtes champêtres* were given in their honor by the towns-people, and by the Duke of Nassau, in the picturesque sites of the Nersberg and the Plattz.

The sectional sittings were on Monday, Wednesday and Thursday. The general meetings following Sunday, on Tuesday and Friday.

The sections on Geology, Botany and Zoology, transacted the most scientific business, the papers in those departments being numerous. Among the subjects brought forward in the chemical section, were "on animal fats," by Von Heintz; on the progress of chemical manufactures in Austria, by Seybel; on the carbonization of wood under water, by Schödlér; on the employment of gas-burners in elementary analysis, by Prof. Hoffmann, &c.

Prof. Haidinger, of Vienna, and Prof. Nees Von Esenbeck, were among the most prominent speakers at the general meetings, the latter having delivered an address in honor of the 200th anniversary of the Leopold-Caroline Academy of Science.

The meeting adjourned to convene next year at Tübingen.

*On a method of obtaining a perfect Vacuum in the Receiver of an Air Pump.* By THOMAS ANDREWS, M. D., F. R. S. &c.—Mr. Andrews published a paper on the above subject in the Philosophical Magazine, which has been copied into the London Pharmaceutical Journal for January, 1853. The first part of this paper relates to the Torricellian Vacuum, which is deemed the most perfect that is capable of being made by art. It then details M. Regnault's method, which consists in providing a large glass globe, of  $4\frac{1}{2}$  to  $5\frac{1}{2}$  gallons capacity, placing in it a thin glass vessel containing 40 or 50 grammes of sulphuric acid and hermetically sealed, and then two or three grammes of water. He then exhausts the globe by the pump, until the water disappears, and the pump ceases to act, and closes the cock. The vessel of sulphuric acid is then ruptured by agitation, when it soon absorbs the aqueous vapor, which has previously driven out the greater part of the residual air by the action of the machine. The receiver of the air pump, in which the desired vacuum is to be produced, is then carefully connected with the exhausted globe; as perfect a vacuum as can be produced by the machine is then made, and the communication between the globe and receiver opened, when the small fraction of air in the receiver distributes itself equally in the two vessels, and is thereby reduced to a minute fraction in the receiver. A repetition of the action of the exhausted globe is necessary in the most accurate experiments. By this means M. Regnault reduced the mercurial column in the manometer to a small fraction of a millimetre. The following method Mr. Andrews proposes as affording a much more perfect vacuum, and with far less trouble to the operator:

“Into the receiver of an ordinary air pump, which it is not required to exhaust further than to 0.3 or even to 0.5 inch, but which must retain the exhaustion perfectly for any length of time, two open vessels are introduced, one of which may be conveniently placed above the other; the lower vessel containing concentrated sulphuric acid, the upper a thin layer of a solution of caustic potash, which has been recently concentrated by ebullition. The precise quantities of these liquids is not a matter of importance, provided they are so adjusted that the acid is capable of desiccating completely the potash solution without becoming itself notably diminished in strength, but at the same time does not expose so large a surface, as to convert the potash into a dry mass in less than five or six hours at the least. The pump is in the first place worked, till the air in the receiver has an elastic force of 0.3 or 0.4 inch, and the stop-cock below the plate is then closed. A communication is now established between the tube for admitting air below the valves and a gas holder containing carbonic acid, which has been carefully prepared so as to exclude the presence of atmospheric air. After all the air has been completely removed from the connecting tubes by alternately exhausting and admitting the carbonic acid, the stop-cock below the plate is opened, and the carbonic acid allowed to pass into the receiver. The exhaustion is again quickly performed to about the extent

of half an inch or less. If a very perfect vacuum is desired, this operation may be again repeated; and if extreme accuracy is required, it may be performed a third time. It is not likely that anything would be gained by carrying the process further. On leaving the apparatus to itself, the carbonic acid which has displaced the residual air is absorbed by the alkaline solution, and the aqueous vapor is afterwards removed by the sulphuric acid. The vacuum thus obtained is so perfect, that even after two operations it exercises no appreciable tension.

"To give a clear conception of the progress of the absorption, I will describe in detail one observation in which the tension was measured simultaneously by a good syphon-gauge and by a manometer, formed of a barometric tube 0.5 inch in diameter, inverted in the same reservoir of mercury as a similar tube communicating with the interior of the receiver. The barometer had been carefully filled, and the depression of the mercury estimated by the method already described at less than 1-100,000th of an inch.

"Previous to the admission of the carbonic acid, the exhaustion was carried only to 0.4 inch, it was again carried to 1 inch, and a third time to 0.5 inch, after which the apparatus was left to itself. The manometer indicated a pressure in—

15'	of 0.25 inch,
30'	" 0.17 "
80'	" 0.10 "
200'	" 0.02 "

In twelve hours the difference of level was just perceptible, when a perfectly level surface was brought down behind the tubes till the light was just excluded. In thirty-six hours not the slightest difference of level could be detected. The vacuum has remained without the slightest change for fourteen days.

It is evident that the only limit to the completeness of the vacuum obtained by this process, arises from the difficulty of preparing carbonic acid gas perfectly free from air. This may be very nearly overcome by adopting precautions which are well known to practical chemists. When an extreme exhaustion is required, the gas holder should be filled with recently boiled water, and the first portions of carbonic acid that are collected in it should be allowed to escape.

The substitution of phosphoric for sulphuric acid would remove the possibility of either aqueous or acid vapors being present even in the smallest amount, but such a refinement will rarely be found necessary.

In the experiment just described, the theoretical residue of air would be 1-135,000th part of the entire quantity in the receiver, which would cause a depression of 1-4500th of an inch. This result must have been nearly realized. If the exhaustion had been carried at each time to 0.2 inch, the residue by theory would have been only 1-3,375,000th part. But the experimental



results will not continue to keep pace with such small magnitudes.—*Lon. Pharm. Journ.*, from *Philosoph. Magazine*.

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*On the Action, and on the Method of preparing Cathartine.*—TRENKLER prepares cathartine from the unripe green berries of *Rhamnus catharticus*. It resembles pure aloetine, both in a chemical and in a therapeutical point of view. One or two grains of cathartine in the form of pills usually produce one or two, or in a susceptible patient, three or four pulpy stools, without griping. Three grains form a large dose. If the first dose should fail to produce the desired effect, a second may be given in three or four hours. Dr. GRAFF (of Darmstadt), who has carefully studied its therapeutic action, employs it in torpor of the bowels, in hepatic and splenic congestions, hemorrhoids, dropsy, and gout.

By simply treating the inspissated juice of the unripe berries with alcohol and ether, we may obtain an impure cathartine in considerable quantity (oz. viij. from 12 lbs.), which acts very powerfully, and much like aloes.—*American Journal of Medical Science, Prov. Med. and Surg. Journ.*, Oct. 13, 1852. From *Jahrb. f. pr. Pharm.*, Jan., 1852.

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*Urea as a Diuretic.*—Dr. T. H. TANNER states (*Med. Times and Gaz.* May 8, 1852), that he has employed urea as a diuretic and found it very efficient, and in no case has it given rise to any unpleasant symptoms. The ordinary dose, on being first used, is ten grains every six hours, dissolved in water flavored with syrup; as its effects decrease, the dose may be augmented to a scruple or more. At the same time, its action should be aided, as that of all diuretics should be, by the free administration of diluents, as well as by keeping the skin moderately cool.

In the first case in which Dr. T. used the urea, and the one in which he more particularly noted its effects, the quantity of urine secreted in the twenty-four hours previous to its administration was only fourteen ounces (high-colored, acid, sp. gr. 1018), whereas, in the succeeding twenty-four hours, during which three doses of ten grains each were administered, the secretion amounted to forty-four ounces (pale, acid, sp. gr. 1013). The remedy was continued for the ensuing nine days, in doses of ten grains every six hours, during which period the urine varied in quantity from forty-nine to thirty-eight ounces. At the end of this time it was discontinued, as the dropsy had been temporarily removed; and, on again having recourse to it three weeks subsequently, its effects were as satisfactory.

*American Journ. Med. Science.*

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*Copahine Mège.*—This is the name of a peculiar preparation of copaiba and cubebs proposed by M. JOSEAU, a French pharmacien in London, with which trials have lately been made in some of the London hospitals and in



private practice, and it is said (*Lancet*, Nov. 6, 1852) with very satisfactory results.

The peculiarity of M. Jozeau's saccharated capsules is stated to be that they are easy and agreeable to take, that they produce no nausea, sickness, or unpleasant purging, and that, when continued for a sufficient period, they cure gonorrhœa in a short time. Considering the insuperable dislike of some patients for copaiba, these, if verified by experience, are certainly most valuable improvements:

The following is the account given by M. Jozeau of the preparation of copahine mège, and the pathological facts which led to the peculiar manner of preparing this remedial agent:

It was noticed that such patients as were purged by the copaiba, evacuated per anum large quantities of this drug in an unaltered state, their urine not containing any of it. These persons, though sometimes cured, generally had a relapse. Those, however, who were not purged became well more slowly, and had no recurrence of the disease; their stools contained no copaiba, and their urine a great deal. From these facts it became evident that, in order to obtain regular and speedy effects, the copaiba should be made to undergo much modifications as to insure its more complete absorption into the system. Experiments were now instituted respecting the effects of the two principal substances contained in the copaiba—viz., the oil and the resin. These were separately tried. The oil produced a decidedly purgative effect; the resin purged less; but no complete cure was obtained by either substance taken separately.

It was now pretty clear that both the resin and essential oil were indispensable for obtaining curative effects, and the question arose how these could be modified so as to allow the stomach to digest them completely. This end was attained in surcharging the copaiba with oxygen, by means of nitric acid, the latter being added in proportions which varied according to the kind of copaiba acted upon. The nitric acid yields some of its oxygen to the essential oil, and the nitrogen is given off in the form of hyponitrous acid, by combining with the oxygen of the atmosphere. The copaiba thus treated is then well washed with water, until it no longer reddens litmus paper, and to it are added one tenth part of cubebs in fine powder, the same proportion of carbonate of soda, and one sixteenth part of calcined magnesia. The mixture is allowed to stand until it is quite solidified, and in that state it is made into small masses. The latter are then carefully covered with sugar, to which a pleasant pink color (*coccus cacti*) is given, and they then look like very pretty sugar plums.

To these saccharated capsules the name of copahine mège was given, because the experiments had been made conjointly by M. Jozeau and M. Mège, and the latter had first thought of making the saccharated capsules. For lymphatic patients and delicate females a second mass was prepared, into which, besides the above mentioned ingredients, some steel

was made to enter. This is then a sort of martial preparation of copaiba. The doses are stated as follows:

When there is neither pain nor inflammation, five saccharated capsules are taken three times per diem. One capsule more is then given with each dose every subsequent day, the doses being thus increased until purging is produced. Where there is pain or inflammation, these should first be treated by the surgeon in the manner he thinks the most advisable, and the copahine is to be commenced when acute symptoms have abated. It has been noticed that the martial capsules have effected a cure when the simple preparation has failed.—*American Journ. Med. Science*, Jan., 1853.

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*Chromic Acid as an Escharotic.*—This acid is recommended by Dr. HELLER, a German physician, as a useful escharotic in severe cases, when properly and judiciously used. According to his experiments, all organic compounds are soluble in the readily deoxidizable chromic acid; the smaller animals, such as mice and birds, were so completely dissolved by chromic acid in the space of fifteen to twenty minutes, that no traces even of their bones, skin, hair, claws, or teeth could be discovered; so that it would appear that this metallic acid is not only both a safe and gradual escharotic, but furnishes us with another rapid and efficient solvent for organic animal matter.—*Annals of Pharm.*, June, 1852.

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*Results of Experimental Investigations on the Antidotal Properties of Nitrous Oxide.* By GEO. J. ZEIGLER, M. D. [of Philad.] Dr. Zeigler after detailing at length the results of his experiments arrives at the following conclusions.

“Firstly, That nitrous oxide or protoxide of nitrogen is a powerful and direct arterial, nervous and cerebral stimulant.

Secondly, That it exerts a direct chemical influence on the blood, by supplying the essential elements for the arterialization of that fluid, and to a certain extent by inducing that process, thus producing in it similar changes to those effected by the atmospheric air, as proved by the effect on, and character of the re-established respiration.

Thirdly, That it is in these various modes antidotal to the effect of certain narcotizing agents.

Fourthly, That where vital excitability is not completely destroyed, this remedy has the power of sustaining and increasing it rapidly, and sufficiently to preserve life in numerous instances in which it would otherwise be destroyed.

Fifthly, That it will re-establish life-action even after all the usual evidences of its existence have failed, such as innervation, respiration and circulation; provided, firstly, that the muscular contractility, or vis insita of the heart and other tissues is not lost; secondly, that the blood has not coagulated or deteriorated to such an extent as to be insusceptible of arterialization and revivification; thirdly, that there is no organic lesion of any vital part

sufficient of itself to prevent recovery; and fourthly, that innervation is still susceptible of re-excitation.

In conclusion, I will state that in my last paper on the therapeutic applications of this agent in the form of surcharged liquid more especially, I inadvertently omitted to mention a peculiarity in its physiological action, which, however, might be anticipated from its influence over the contiguous renal apparatus, viz., its stimulant effect on the generative organs, thus operating as an aphrodisiac. This effect, like its diuretic, is not, however, constant or universal; yet, nevertheless, its application may prove useful in atonic states of this apparatus. With respect to its favorable therapeutic influences and applications, therein detailed, I have no reason to change my views, further experience and reflection only confirming still more strongly all former observations and impressions.—*Boston Med. and Sur. Jour.* Dec. 8th, 1852.

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*Leeches.*—A correspondent of the New York Times, writing from Constantinople, gives the following information:

“It is not more than from forty to fifty years that leeches have been in *extensive* use for the abstraction of blood from the human body, and for many years the supply from the ponds of each country was sufficient for the wants of the population. But as the use of them increased, superseding so often the lancet and cupping, the leech traders turned their attention to procuring them from foreign countries. Twenty-five years since, all who could afford it in America used the “French” leech in preference to the American leech, because it would draw twice or thrice as much blood. But none the less a large portion of the leeches exported from France, have been brought thither from other countries on the Mediterranean.

“Leeches for Western Europe and America are now obtained from Morocco, Algiers and Tunis—from Hungary (which sends one year with another 120,000 pounds of leeches annually,) from Russia, and from Persia even. A trader brought, last winter, without hardly any loss by the perishing of the leeches, fifteen hundred pounds of leeches from the latter country. They froze solid as he was passing the lofty mountains, near Erzroom, but thawed into life again. The obstacle to bringing leeches from a great distance has been, that they were so liable to perish, and needed so much care and attention on the voyage. However great the loss and the consequent rise in price, there seems no limit to the price that the sick are willing to pay for them. Fifty cents is often paid for a single leech in our country towns. And in Peru, in South America, leeches (brought, perhaps, from Persia) have sold for three to five dollars a piece.

“The product of the leech *fisheries* in Turkey, is at present annually greater than that of any other country. One reason among others, for this result, is the want of cultivation, and the amount of undrained land in consequence on a sparsely inhabited country, and the facilities allowed to the Europeans who follow the business and have the protection of the local au-



thorities. The product of the last three years has been about 180,000 pounds annually, worth at the place of exportation eight dollars a pound, or \$1,440,000 each year. In a pound of small leeches there are from two hundred and fifty to four hundred leeches. A pound of large leeches contains half that proportion. There are probably from 50,000,000 to 60,000,000 of leeches annually exported from Turkey. They are sent chiefly to Trieste, Marseilles, and London, and some to America direct. The price varies greatly at these ports, according to the supply. The prices current of Marseilles as regularly include the price of leeches, as of wheat and wool."—*Boston Med. and Sur. Jour.*, Aug. 4th, 1852.

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*On Elastic Collodion.* By M. E. LAURAS.—Having made collodion the subject of a special study, and the object which I sought having been attained, I now communicate the good results I have obtained by the *modus faciendi* which I employ.

The important improvement to be made in this compound, which hitherto has not been of very frequent application in therapeutics, consists in giving efficacy to it and in preventing the sufferings produced by its application on any portion of the body, and principally on the articulations, which are much constricted after having been covered with it, an effect due to its want of suppleness and elasticity, and which the skin requires both for stretching and contracting.

By adopting the following formula, every inconvenience is obviated, collodion becomes easy of employment, and enables the patient to move without suffering pain:—

Sulphuric acid of sp. gr. 1.847, 300 grms.; nitrate of potassa (very dry) 200 grms. Mix together in a stone-ware or porcelain pot, and add carded cotton, ten grms.

Leave in contact for twelve minutes; withdraw the cotton, wash it with cold water to remove the acid which it retains, and after two or three rinsings, immerse it in water containing thirty grms. of subcarbonate of potassa in solution in 1000 grms. of water; plunge it again into ordinary water, agitate well, and dry at a temperature of 77° to 86° F.

The cotton, thus prepared, takes the name of Xyloïdine, and may afterwards be mixed with the ether and the other substances which form it into elastic collodion.

*Elastic collodion.* Xyloïdine 8 grms.; ordinary sulphuric ether 125 grms. Place in a wide-mouthed flask, and add alcohol of sp. gr. .825, 8 grms. Agitate and then make a mixture composed of Venice turpentine 2 grms.; castor oil 2 grms.; white wax 2 grms.; sulphuric ether 6 grms. Heat together the first three substances, add the ether, and combine the two mixtures.—*Repertoire de Pharmacie* and the *Chemist*, from *London Pharm. Jour.*, Dec. 1st, 1852.

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*On the Preservation of Fruits and their Juices, by the application of Steam.* By MAYET. The author has previously proved by a research, that the heat



of steam destroys the ferment in fruits, so that they may be preserved for a long time. To learn when this point has been reached, it is necessary to know how high the temperature rises in the fluid enclosed in the bottles when they stand shut up in a room, the atmosphere of which has been heated to 184° Fahr., and to learn the time requisite as well as the degree of heat which is necessary for the destruction of the ferment.

The results of his researches teach, that in no instances the fluid contents of the bottles which were placed in the steam room reached the temperature of their surrounding atmosphere, until they had stood, at the very least, an hour in it. In glass bottles, the influence of the heat was quicker than in stone ware.

From the commencement of the operation—that is, when the fire is first applied to the steam apparatus, nearly half an hour is required before the temperature of the steam room is reached by the contents of the bottles, when they hold about two pints and are made of glass. When made of stone, double that time is necessary. These results arise from each kind of vessel requiring a different quantity of heat to raise it to the temperature of the steam room; consequently the steam room does not arrive at a temperature of 184° with the same quantity of fire with each kind of vessel. When this temperature has been reached in the steam room, the contents of the glass bottles will be at 164°, and those of the stone ware ones at 86°.

Mayet's researches show that fruits and their juices do not require a temperature of 212° Fahr. to preserve them, and that 184° is sufficient to destroy their ferment, but that care must be taken to ascertain that the contents of the vessels have really reached this temperature.—*Annals of Pharmacy and Practical Chemistry, from Journal de Pharmacie.*

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*On the Growth of various kinds of Mould in Syrup.*—Professor Balfour, the Professor of Botany in the University of Edinburgh, has read a valuable paper on this subject, at the Botanical Society in that city, in which he states that mould of various kinds, when placed in syrup, has a tendency to spread out, and form a flat, gelatinous and leathery expansion. This he shows by experiments as follows: Mould that had grown upon an apple was put into syrup; and in the course of two months there was formed upon the syrup a cellular, flat, expanded mass, while the syrup was converted into vinegar.

Mould that had grown upon a pear was also put into syrup, and the same result was produced. He also experimented in the same manner with various moulds that were growing upon bread, tea, and some other vegetable substances; the effect produced in most cases, was to cause a fermentation, resulting in the production of vinegar. In another experiment, a quantity of raw sugar, treacle and water were put into a jar, without any mould being introduced. When examined, after a lapse of four or five months, a growth like that of the vinegar plant was visible, and vinegar was formed. This plant was removed and put into fresh syrup, which was followed again by the production of vinegar. It appears

that, when purified white sugar only is used to make syrup, the plant, when placed in it, does not produce vinegar so speedily; the length of time required for the changes varying from four to six months. Dr. Balfour thinks this may possibly be owing to the presence of some ingredient in the raw sugar and treacle, which may tend to promote the production of vinegar. —*Annals of Pharmacy and Practical Chemistry.*

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## Editorial Department.

**SALE OF POISONS BY DRUGGISTS, APOTHECARIES AND OTHERS IN THE UNITED STATES.**—The Committee to whom the above subject was referred at the late Pharmaceutical Convention are desirous of getting all information on the subject they can obtain, and will feel under obligations for contributions to that end from Apothecaries, etc., residing anywhere within the United States. The special facts wanted are, 1st, whether any State or municipal law exists regulating the sale of poisons; 2d, if so, how it works; 3d, if not, does any voluntary conservative action have place among druggists and apothecaries, and if so, how far; 4th, to what extent do grocers and general shop-keepers retail arsenic and other poisons used for destroying animal life. Any such communications may be addressed to "W. Procter, Jr., Philadelphia," Chairman of that Committee, or to Messrs. Dr. Philbrick, of Boston, Alexander Duval, of Richmond, Va., or G. D. Coggeshall, of New York, and its other members.

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**DRUG INSPECTORSHIPS AND THE NEW ADMINISTRATION.**—Rotation in Office has become one of the most prominent features of our National Government in its progress from Administration to Administration, and this too often without much regard to the public interests. Changes in many of the prominent and most lucrative officerships are frequently attended with small inconvenience, but it often has happened that the displacement of a clerk or inspector has thrown important duties into confusion. The effects of this policy have already been exhibited in the annals of the present government as regards the Inspectorship of Drugs. From the nature of the services required it is no easy matter to select well qualified persons. The association of the Chemical, Pharmaceutical, and Medical knowledge absolutely requisite to carry out the objects of the law, with the business qualifications proper to protect the pecuniary interest of the Government, when found in any Inspector of Drugs, especially when these are backed by experience in office, should prevent him from being displaced on party grounds. We hope the new Administration, if they determine to make any change, will at least consult the Colleges of Pharmacy of the several cities, in the appointment of the new officers.

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**LECTURES BEFORE THE MASSACHUSETTS COLLEGE OF PHARMACY.**—We learn through the Boston Medical and Surgical Journal, that Dr. Charles T. Jackson has commenced a course of twelve lectures before that Institution. This

is gratifying information, as it indicates a determination upon the part of our Boston friends to advance in the right way. Pharmaceutists established in business, who are willing to expend time and money to provide means of education for their assistants and apprentices, are disinterested advocates of professional advancement.

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TO CORRESPONDENTS.—A Correspondent, K., asks the rationale of the action of the mixture known as “Twigg’s Hair Dye” on the hair, and why it will dye some kinds of hair and not other kinds. An ingenious medical friend informs us that the reaction that takes place is between the oxide of lead in the acetate of lead, and the sulphur naturally existing in the hair, which results in the deposition of a layer of sulphuret of lead on and perhaps in the exterior layer of the hair. In cases where it does not act, he suggests that the sulphurous ingredient is absent, as is known to be the case in some specimens of hair. This seems to prove that the sulphur that enters Twigg’s preparation is of no use, it only being active where sulphur exists in the hair to be acted on, and it is highly probable that the officinal solution of subacetate of lead, from its ready decomposition so as to yield oxide of lead, is much more appropriate and efficient for this use than the neutral acetate. The friend above quoted, considers that ammonia, associated with oxide of lead, increases its efficiency as a dye by virtue of its detergent action on the surface to be dyed.

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AN IRISH OPINION OF PHILADELPHIA REFORMERS.—*The Dublin Medical Press* for Jan. 5th, 1853, contains the following letter addressed to its Editor, in relation to the joint Report of the Philadelphia County Medical Society, and the Philadelphia College of Pharmacy, published in our Journal for January 1852. We do not know whether the “Press” published the whole of the “Report” or not, but if it did, it is singular that the writer of the subjoined letter should have mistaken an attempt to correct existing evils in *one city and county*, for a general manifesto addressed to the physicians and apothecaries of the whole United States. The writer’s hints as to the *mode* of reforming medico-pharmaceutical practice in this country are rather amusing, especially that about appointing committees of inquiry.

To the Editor of the Medical Press.

SIR,—In your paper of the 8th of December, you give a code of “Pharmaceutical Ethics,” framed by the Medical Society and College of Pharmacy of Philadelphia, U. S.,” and you commend its “candid and patient consideration to the Dublin practitioners in this line.” Now, sir, my object in writing to you is to show the Philadelphia faculty, who, as a matter of course, read the MEDICAL PRESS, that your recommendation of their code of laws will never be attended to as long as the present system of gross neglect, with regard to professional acquirement and legitimacy, exists within the States; because there is no man could respect the laws of a body who allow Tom, Jack, and Jerry to practise physic and pharmacy in their country; never taking the trouble of inquiring whether he is a tinker or a tailor, but permitting him to practise, to the loss and detriment both of the legitimate practitioner and the public. This is too well known a fact to admit of even the least denial. I am myself cognizant of such a case at



present in the city of St. Louis, Missouri, where a man, who was brought up to honest business in this good city of Dublin, went to St. Louis, and having the audacity to write Doctor before his name, is now nearly twelve months in practice as an apothecary and doctor, though he never lost one hour in the attainment of medical or pharmaceutical knowledge; and here is this impostor making his fortune, while men who have wasted years of toil and some hundreds of pounds before they could obtain a degree, are not able to get a crust in the same city. Now, sir, if a proper law was instituted by the legislature, I ask you would this be the case? If the Colleges of Philadelphia had a branch committee in every city and town in the States, whose duty should be to go around annually and demand the diploma of every person calling himself a doctor, surgeon, or apothecary, and practising as such—if such an arrangement was, I ask you would this state of things continue? By taking the names and dates of the several diplomas exhibited, they could communicate with the colleges at home, and soon discover whether the holder of each diploma was its original possessor: thus would the chaff be separated from the wheat, and while the legal practitioner would be thus protected, the culprit, when exposed, would be greatly benefited by a three months' dance upon the treadmill, or twelve months solitary confinement; with a caution that if caught so offending again, the full rigor of the law would be brought to bear upon him.

To each sub-committee, some little trouble in the carrying out of the foregoing arrangement may be given for the first year, but there it would cease, for every year after it would be only the diploma of those who had commenced practice since the previous examination that they would have to inspect, and by men who love their profession as a noble and an honorable one, this task would be cheerfully performed; and believe me, all quacks and impostors, glorying in stolen or borrowed imaginary plumage, would very soon sink into their former insignificance.

When the Philadelphia colleges act thus for the safety and honor of their profession, then will their brethren at this side of the Atlantic read with pleasure every paper and advice emanating from them, and America will bless the day that they came forward to save her children from being butchered and poisoned by those despicable wretches—those self-made M. D.'s and apothecaries of her Western States. I am, sir, yours,

A SUFFERER BY QUACKERY.

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*Report to Congress of a select Committee on the claims of William T. G. Morton, M. D., as the discoverer of the anæsthetic power of Sulphuric Ether when inhaled.* By Dr. WILLIAM H. BISSELL, of Illinois, Chairman. Congressional Document, pp. 120.

Dr. Bissell's Report awards the merit of the discovery of the anæsthetic properties of Ether to Dr. Morton, in the following language:

Upon a full examination of the whole case, so far as time and means were afforded to your committee, they have come to the conclusion—

1st. That Dr. Horace Wells did not make any discovery of the anæsthetic properties of the vapor of sulphuric ether, which he himself considered reliable, and which he thought proper to give to the world. That his experiments were confined to nitrous oxide, but did not show it to be an efficient and reliable anæsthetic agent, proper to be used in surgical operations and in obstetrical cases.

For the rest, your Committee have come to the same conclusions that were arrived at by the Trustees of the Massachusetts General Hospital at their meeting in January, 1848, and reconsidered and confirmed in 1849, and adopted by the former Committee of the House, viz:



2nd. That Dr. Jackson does not appear at any time to have made any discovery, in regard to ether, which was not in print in Great Britain some years before.

3d. That Dr. Morton, in 1846, discovered the facts, before unknown, that ether would prevent the pain of surgical operations; and that it might be given in sufficient quantity to effect this purpose, without danger to life. He first established these facts by numerous operations on teeth, and afterwards induced the surgeons of the hospital to demonstrate its general applicability and importance in capital operations.

4th. That Dr. Jackson appears to have had the belief that a power in ether to prevent pain in dental operations would be discovered. He advised various persons to attempt the discovery. But neither they nor he took any measures to that end; and the world remained in entire ignorance of both the power and safety of ether, until Dr. Morton made his experiments.

5th. That the whole agency of Dr. Jackson in the matter appears to consist only in his having made certain suggestions, which aided Dr. Morton to make the discovery—a discovery which had for some time been the object of his labors and researches.

*The Southern Journal of the Medical and Physical Sciences.* Edited by Doctors J. W. KING, WILLIAM P. JONES, R. O. CURRY, and B. WOOD. Vol. 1. No 1. Jan. 1853. Nashville, Tenn.

With our January exchanges came a new medical journal under the above caption and direction, bi-monthly in its issue, and each number containing about 72 pages. The general appearance and typography of the book is good. The work is divided into three departments, viz: Practical Medicine and Surgery, Chemistry and Pharmacy, and Dental Surgery, and addresses itself to the Physician, the Apothecary and the Dentist. The latter is rather a new feature, though, no doubt, one that will prove advantageous to the publishers, as it extends the field of subscribers. The contents of the Chemical and Pharmaceutical department in the initial number, indicate a disposition to give more importance to those collaterals of medicine, than ordinary medical journals, and if sustained by contributions from the intelligent of the Apothecaries, may prove a useful agent in spreading correct views of the ethics and practice of Pharmacy in the Great South West. Success to the effort.

*Materia Medica, or Pharmacology and Therapeutics.* By WM. TULLY, M. D. Springfield, Mass.

We have received the 2d and 3d numbers of this work for December and January, which do not finish the introductory chapter. The originality of the author's mode of treating his subject is very manifest, and indicates that he has devoted to it much thought and time. As we remarked in a former notice, Dr. Tully is inclined to employ a peculiar nomenclature, which, though natural to himself by long adoption, gives an air of pedantry to his composition, however unintentional it may be. For instance, a few short sentences will explain—"It has long appeared to me that the medicinal operation of this pure Alcaloid Quinine, is more pleasant, agreeable and kind than that of the Disulphate of Oxyd of Quininum." "The crude, in-

spissated, descending sap of *Papaver somniferum*, commonly called Opium, requires," &c. "None of the medicinal powers, operations or effects, either of Morphine or Oxyd of Morphinium, seem to depend," &c. "To this I doubt not that the Iodo-quininate of Iodide of Potassium," &c., &c. These extracts are merely made to illustrate the great latitude Dr. Tully assumes in dealing in nomenclature, apart from his views on the several subjects treated, which, when the first part of the work has been completed, we will endeavor to notice, as they deserve more time and space than our limits and leisure will now permit.

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*A Discourse on the times, character and writings of Hippocrates, read before the Trustees, Faculty and Medical Class of the College of Physicians and Surgeons, at the opening of the term 1852-3.* By ELISHA BARTLETT, M. D., Prof. Materia Medica, &c. New York, 1852.

Introductory lectures too often prove a bore to the audience who are condemned to listen, because a tale too often told loses its interest, and lecturers are prone to hedge in the limits of their discourses by the well defined lines of their specialities. Occasionally, breaking through this time-sanctioned custom, the preliminary hour of "a course" is rendered a season of intellectual pleasure; the speaker enlists the attention of his hearers, and together they proceed to gather flowers in the fields of learning to visit the men and scenes of ancient story, and to contemplate the life-histories of men celebrated in building up medical science. To this class belongs the "Discourse" of Dr. Bartlett, and, despite its inordinate length, we doubt not it was listened to with continued interest.

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*Notice of the Life and Professional services of WILLIAM R. GRANT, M. D. A discourse at the opening of the lectures in the Medical Department of Pennsylvania College for the session 1852 & 53.* By HENRY S. PATTERSON, M. D., Professor of Materia Medica and Therapeutics.

The character of the late Professor Grant, is eloquently depicted by his colleague, as full of earnestness in the pursuit of his profession, and of seriousness in the business of life. Conscientious in the discharge of his duty to his class, his patients, his brethren, and to his inner self, he was ready, when death approached, to leave the scene of his mortal career with the confidence and hopefulness incident to a well-spent life.

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*Physicians' Visiting List, Diary, and Book of Engagements for 1853.*  
Philadelphia, Lindsay & Blakiston.

A year's experience has proved the usefulness of this little unpretending annual, and won for it the favorable opinion of many practitioners.

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DR. BUCHNER, SR., the learned Pharmaceutist and distinguished Journalist of Bavaria, died on the 6th of June last, in the 70th year of his age. Dr. Buchner was born at Munich, on the 6th of April, 1783. He commenced the apothecary business in 1803 with Ostermaier, and continued it

with the celebrated Trommsdorf of Erfurt, during which service, in 1807, he took the degree of Doctor in Philosophy, at the University of Erfurt. In 1814 Dr. Buchner was engaged in the formation of the Pharmaceutical Society of Bavaria, and was its first Secretary. He commenced the publication of his *Repertorium für die Pharmacie* in 1815, so well known for its scientific character, and which embraced more than 100 volumes at his death. In 1818 he was appointed Professor of Pharmacy and Toxicology in the University of Landshut, and subsequently, in 1822, received the degree of M. D. After the University of Landshut was transferred to Munich, in 1826, the pharmaceutical class increased so as to be second only to that of Berlin. Dr. Buchner belonged to many learned societies, and was knighted by the King of Bavaria in 1848. From 1849 to his death he was actively engaged as the President of the Commission appointed by the King to revise the *PHARMACOPOEIA BAVARICA*, a work in which he took deep interest. The following paragraph from Dr. Pettenkoffer's address on the occasion of his burial, is a noble testimony to the merit and standing of his departed friend :

It was a long road from the gardener's boy to the dignity of rector magnificus of one of the first universities in Germany, which our lamented friend and brother had to pass ; the road was so difficult that his energies must have been uncommon not to have succumbed before reaching the goal. Dr. Buchner was no hot-house plant, that required anxious nursing—he was made for the rough soil of life, whose varying heat and cold, drought and moisture, he experienced, blooming and bearing fruit. Dr. Buchner belonged to the number of those men whose zeal is not to be enhanced by praise and flattery, by the vile allurements of ambition, nor to be slackened by unmerited criticism and indifference. After having once chosen a certain profession, that of Pharmaceutist, he was to the end of his active life prompted in all his movements by one single idea—by the idea of ennobling the trade of the Pharmaceutist on strictly scientific foundations. This object he had before him when he went to Trommsdorff, at Erfurt ; with this view he visited the hospitals at Munich, where he not only dispensed medicines, but also watched their effect upon the patient ; this same idea urged him to the earnest study of Chemistry, as the principal foundation of technical Pharmacy, which gave him strength to continue his voluminous *Repertorium für Pharmacie*—it was this idea which induced him to accept the pharmaceutical professorships at Landshut and Munich, and which guided him in all his labors relating to the art of the Pharmaceutist. Long before his death he had reached the goal as victor, and many a laurel crowned his modest brow. Not only did the Academy of Sciences at Munich elect him as its member, but many foreign academies and learned societies did the same. He filled at our university several times the office of Dean of the Medical Faculty, and was, as has been already mentioned, in the year 1842–43 Rector Magnificus. His pupils loved and esteemed him in an uncommon degree, and not only the Pharmaceutists of his native country, but also those abroad, considered him as their chief. When, in 1843, Dr. Buchner visited Vienna, he was welcomed on board the steamer by all the Pharmaceutists of that capital, who vied with one another in making for him each day of his residence there a feast.—*London Pharm. Journ.*, from *Buchner's Neues Repertorium*.

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Dr. PEREIRA.--By the last steamer we are informed of the death of this distinguished physician, lecturer and writer, in London, at the age of 49 years, in the midst of his untiring and useful labors.



# THE AMERICAN JOURNAL OF PHARMACY.

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MAY, 1853.  
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## CHEMICAL EXAMINATION OF THE BERRIES AND BARK OF RHUS GLABRUM.

By WILLIAM J. WATSON.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

RHUS GLABRUM is found in the secondary list of the U. S. Pharmacopœia, and is known by the common names *Smooth Sumach*, *Pennsylvania Sumach*, and *Upland Sumach*.

The fruit of *Rhus glabrum*, though officinal in our pharmacopœia, is seldom employed by the regular practitioner, but is extensively used by families residing in the country in the form of an infusion, as a pleasant drink in febrile complaints, and as a gargle for sore throat. From the observations of Dr. Fahnestock, it appears that the inner bark of the root is possessed of much higher remedial powers than the fruit; he states that an infusion made from it is almost a specific when employed in the form of a gargle in the sore mouth resulting from mercurial salivation. The Sumach leaves are also used in tanning, and an infusion made from the bark, and concentrated by evaporation, is used as a mordant for dyeing red colors.

The following investigation of the fruit, bark of the root, and galls of sumach, will exhibit their proximate constitution, and may throw some light on their value, as remedial agents.

Professor Rogers in his paper "On the existence of bimalate of lime in sumach berries," which was published in vol. 7, page 56, of the American Journal of Pharmacy, seemed to doubt the presence of uncombined malic acid in the berries; while Mr. Cozzens of New York, supposed the berries to contain the acid in a free state. From the result of the following experiments, both of the gentlemen may have been correct, and the difference in their conclusions may be accounted for, by supposing the specimens examined to have been collected at different times in the season.



*Botanical Description.*

The *Rhus glabrum* is an indigenous shrub, belonging to the natural order Anacardiaceæ, and in the sexual system to Pentandria Trigynia. This plant is from four to twelve feet high, with a stem usually more or less bent, and divided into straggling branches, covered with a smooth light-gray or somewhat reddish bark. The leaves are upon smooth petioles, and consist of many pairs of opposite leaflets, with an odd one at the extremity, all of which are lanceolate, acuminate, acutely serrate, glabrous, green on their upper surface, and whitish beneath. In the autumn their color changes to a beautiful red.

The flowers are greenish-red, and disposed in large, erect, terminal, compound thyrses, which are succeeded by clusters of small crimson berries covered with a silky down.

This shrub is found in almost all parts of the United States, growing in old neglected fields, along fences, and on the borders of woods, seeming to prefer hill sides, and the steep banks along rivers, where it grows very luxuriantly, and when the berries are ripe presents a beautiful appearance when seen at a distance.

*Analysis of the Bark of the Root.*

The bark of the root is of a light gray color, with a tinge of red externally, yellowish white internally, having a very astringent and slightly sweet taste.

The specimen examined was collected in the latter part of April.

A cold infusion was made from the bark, by maceration and displacement, which was of a light brown color, tinged with red, and had the taste and odor of the bark. It gave an acid reaction with litmus paper.

*Albumen.*—The presence of albumen was evinced in the cold infusion, by solutions of tannin and corrosive sublimate, and also by coagulating with heat.

*Tannic Acid.*—The muriatic tincture of iron, when added to the cold infusion, produced a bluish-black precipitate; precipitates were also produced, with solutions of gelatine and quiniæ.

*Gum.*—A cold infusion was made, and deprived of its tannin by adding gelatine in excess, filtered, and boiled to remove the albumen, again filtered, and subacetate of lead added, which produced a precipitate.

*Starch.*—A decoction was made by boiling a portion of the bark in water, for fifteen minutes, and allowed to cool; to the filtered decoction a few drops of tincture of iodine were added, which produced a precipitate characteristic of starch.

*Gallic Acid.*—An infusion was made with cold water, and deprived of its tannin by means of gelatine, filtered, and the filtrate evaporated to an extract. This was treated with ether, and when the ethereal solution was allowed to evaporate spontaneously, it yielded crystals of a light yellow color, which, when dissolved in water, gave an acid reaction with litmus paper; and solution of sesquisulphate of iron added to it, caused a greenish black coloration, entirely dissipated by heat.

*Caoutchouc.*—An alcoholic extract was made, and a portion of it was taken and rubbed up with water, giving a dark and opaque liquid; this was then filtered, and a residue was left on the filter, which had the appearance and consistence of caoutchouc, and was entirely soluble in recently distilled oil of turpentine.

*Soft Resin.*—The remainder of the alcoholic extract was treated with ether, and the ethereal solution shaken up with water, when a light gray resinous precipitate was thrown down, which was acid to litmus paper, had a soft consistence, and was entirely soluble in solution of caustic potash, with the effect of neutralizing the solution, which would seem to indicate an acid resin.

*Volatile Oil.*—Water distilled from the bark, had a strong disagreeable odor, and was slightly milky, as if due to the presence of volatile oil.

*Coloring Matter.*—The bark contains a small portion of brown coloring matter, which is dissolved out by both alcohol and water. It was not isolated.

From the foregoing experiments the bark of the root contains albumen, gum, starch, tannic acid, gallic acid, caoutchouc, soft resin, coloring matter, and probably a volatile odorous principle.

#### *Analysis of the Galls.*

Sumach galls are of a reddish brown color externally, grayish white internally, having a very astringent and slightly bitter taste, and vary much in size and appearance, being generally very irregular in their outline, hollow, and sometimes consist of a mere shell, of a line or less in thickness.

The specimen of sumach galls which I examined, was an inferior one, from being collected late in the season, and yielded only six per cent. of tannic acid, about three per cent. of gallic acid, together with albuminous and coloring matter.

### *Analysis of the Berries.*

The appearance of sumach berries is familiar to every druggist, they grow in large clusters, and are generally of a crimson color, and covered with a silky down.

Two specimens of berries were examined, one of which was collected in the latter part of August, and the other late in September. The specimen collected in August was of a deep red color, and slightly acid taste, and the berries were completely covered with the silky down peculiar to them. When examined under the microscope, the silky down appeared to be a mass of tubular hairs of a white color, enveloped in a crystalline coating of bimalate of lime, impregnated with red coloring matter, resembling an icicle in appearance.

The specimen collected in September was of a crimson red color, and very acid taste, and when examined under the microscope the berries were found to be nearly devoid of the peculiar silky down, but were covered with a deep red coating of moist matter, as if due to the presence of a deliquescent salt.

*Tannic Acid.*—The presence of tannic acid in sumach berries was determined by the following test: the tincture of muriate of iron, produced a bluish black precipitate, when added to the cold infusion. Precipitates were also produced with solutions of gelatine and tartar emetic.

*Gallic Acid.*—An infusion was made with boiling water, the tannic acid removed by adding gelatine in excess, filtered, and the filtered liquor evaporated to an extract, which was treated with ether, and the ethereal solution allowed to evaporate spontaneously, when it yielded a substance of a light yellow color and slightly crystalline form, which, when dissolved in water, and solution of sesquisulphate of iron added, produced a greenish black coloration entirely dissipated by heat.

*Fixed Oil.*—One hundred grains of the berries, collected late in August, were bruised, and treated with cold ether by displacement, and the ethereal tincture allowed to evaporate spontane-

ously, yielding a residue weighing thirty grains, which was shaken up with water to remove the tannic and gallic acids, and allowed to stand for a short time, when an oily matter was found floating on the water. This, when separated, weighed fifteen grains. It was found to be a fixed oil, by giving a greasy stain to paper, which did not disappear by heating; it also burnt with a smoky flame, and was saponified by potash. It was miscible in all proportions with chloroform, and but slightly soluble in alcohol. It is probable that the oil exists in the kernels of the seed, as it cannot be obtained but in very small quantity from the unbruised berries.

*Malic Acid and Bimalate of Lime.*—The quantity of free malic acid in the berries was estimated by making a tincture with cold alcohol (bimalate of lime being insoluble in cold alcohol) and evaporating carefully to dryness, dissolving the alcoholic extract in water and adding acetate of lead to this, so as to obtain the malic acid as malate of lead. The malate of lead was afterwards decomposed by means of sulphuretted hydrogen, by which the malic acid was liberated, and it was isolated by filtering and evaporating the solution carefully to dryness. The quantity of bimalate of lime present was estimated, by burning the aqueous extract obtained from a given amount of the berries, treating the ashes with an excess of nitric acid, filtering, and precipitating the filtered liquor, with oxalate of ammonia in excess, so as to obtain the lime present as oxalate.

Bimalate of lime readily crystallizes from a concentrated aqueous solution of the berries, the size of the crystals depending upon the mode of evaporation, being much larger if evaporated spontaneously.

Two specimens of berries collected at different times were analyzed. The first collected in the latter part of August, yielded 7.46 per cent of bimalate of lime, and 0.50 per cent of free malic acid. The second specimen, collected late in September, yielded 3.50 per cent. of bimalate of lime, and 2.75 per cent. of uncombined malic acid.

Which proves that berries collected at different times in the season, vary much in the quantity of malic acid and bimalate of lime which they contain.

*Red Coloring Matter.*—A portion of the berries were treated



with alcohol, and the alcoholic tincture evaporated to an extract, and then treated with ether to remove the tannic and gallic acids, and any oily matter that might be present. The extract was then dissolved in water, and solution of ammonia added gradually, until the malic acid present was accurately saturated, which had the effect of changing the red color to blue; when the alkali was added in excess it became green, and when allowed to stand in contact with an excess of the alkali, the coloring matter was decomposed, changing to a reddish brown. The true coloring matter of sumach berries is therefore blue, which is changed to red by the action of the free malic acid present.

*Extractive Matter.*—A strong infusion was made with boiling water, and the bimalate of lime crystallized out by spontaneous evaporation; the concentrated infusion was then filtered and shaken up with ether, to remove the tannic and gallic acids, the ether was separated, and the aqueous solution evaporated to an extract, and treated with alcohol to remove the coloring matter and malic acid, and a dark brown residue was left of extractive matter, having a slightly bitter taste.

*Gum Albumen and Starch.*—The presence of neither of the foregoing principles could be detected when the usual tests were applied.

*Volatile Oil.*—Half a pound of the bruised berries were treated by distillation with water till a pint of distillate was obtained, which was returned to the still with another similar portion of berries, and a little more water, and again a pint distilled.

The distillate was somewhat milky, and strongly charged with a peculiar, unpleasant odor, probably due to volatile oil.

From the foregoing experiment with sumach berries they contain tannic acid, gallic acid, fixed oil, free malic acid, bimalate of lime, red coloring matter, extractive matter, and probably volatile oil.

*Philadelphia, January 29th, 1853.*

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## ON SYRUP OF IODIDE OF IRON AND MANGANESE.

BY WILLIAM PROCTER, JR.

The attention of the medical profession has recently been awakened to the advantages to be derived from the use of the

salts of iron and manganese in combination, when preparations of iron alone have heretofore been indicated. Among the compounds used by M. Petrequin, is a syrup of iodide of iron and manganese, but the method suggested for its preparation from the solid iodides, by M. Burin-Dubuisson is too indefinite to be generally adopted, besides involving the necessity of previously preparing and keeping the solid iodides. The following formula yields a preparation of the strength of the officinal syrupy solution of iodide of iron, and the manner of using it, and the doses are the same.

Take of Iodide of Potassium, . . . .	1000 grains.
Proto-sulphate of iron, (in crystals,) . . . .	630 "
Proto-sulphate of manganese, " . . . .	210 "
Iron filings, (free from rust,) . . . .	100 "
White sugar, (in coarse powder,) . . . .	4800 "
Distilled or boiled water, a sufficient quantity.	

Triturate the sulphates and the iodide separately to powder, mix them with the iron filings, add half a fluid ounce of distilled water, and triturate to a uniform paste. After standing a few minutes, again add half a fluid ounce of distilled water, triturate and allow it to rest fifteen minutes. A third addition of water should now be made and mixed. The sugar should then be introduced into a bottle capable of holding a little more than twelve fluid ounces, and a small funnel, prepared with a moistened filter, inserted into its mouth. The magma of salts should then be carefully removed from the mortar to the filter, and when the dense solution has drained through, distilled or boiled water should be carefully poured on in small portions, until the solution of the iodides is displaced and washed from the magma of crystals of sulphate of potash. Finally, finish the measure of twelve ounces, by adding boiled water, and agitate the bottle until the sugar is dissolved. The solution of the sugar may be facilitated, when desirable, by standing the bottle in warm water for a time, and then agitating.

Each fluid ounce of this syrup contains fifty grains of the mixed anhydrous iodides in the proportion of three parts of iodide of iron to one part of iodide of manganese, and the dose is from ten drops to half a fluid drachm.

*Remarks.*—Owing to the slight solubility of the resulting sulphate of potash, and the small quantity of water employed to effect the interchange of elements, but little of that salt is contained in the syrup. The object of the iron filings is to saturate any free iodine that may be eliminated during the exposure consequent on the gradual reaction of the salts. The use of either distilled, or cold recently boiled, water, is necessary to obviate the effect of air on the iodides. It is necessary to allow sufficient time for the complete decomposition of the sulphate of iron, else the syrup will be contaminated with it. The proper moment to lixivate the sulphate is known by the cessation of the crystallization of the sulphate of potash. The bottle should be shaken from time to time during the filtration to protect the filtered solution, and the washing process should be stopped as soon as the sulphate ceases to have a well-marked taste of the iodides. Practically in this, as in all cases where syrups are made by agitation, and are not to be filtered, it is best to use pure lump sugar, and coarsely powder it for the occasion, as the commercial powdered sugar frequently contains dusty impurities. The preparation when finished has a very pale straw color; if the salts have not been all decomposed before the washing, the syrup will have a greenish color, and subsequently deposit crystals of sulphate of potash by standing.

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ON THE NATURE OF THE STEAROPTENE OF OIL OF MONARDA PUNCTATA, AND ON THE PRODUCTION OF OXALIC ACID FROM IT BY THE ACTION OF NITRIC ACID.

By CHARLES T. BONSALE.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

When the essential oil of *Monarda punctata* is exposed to a temperature of about 40° F., in the presence of moisture, it is transformed into a stearoptene, which has received from Mr. Procter the appellation of monardin,—a name that ought scarcely to be applied, as it would seem to indicate that it was the active ingredient of the oil, while it is in its nature a true camphor. This substance separated from the oil, and distilled over dry chloride of calcium, crystallizes in large oblique rhom-

bic prisms, composed of transparent plates. It melts at  $118^{\circ}\text{F}$ . and boils at  $426^{\circ}\text{F}$ ., after which the temperature may gradually be reduced to  $82^{\circ}\text{F}$ ., when it solidifies upon slight agitation. When a small portion of eleoptene is present, the temperature may be reduced much lower before crystallization takes place. According to the analysis of M. Arrpe, monarda camphor (a name which is more applicable to this stearoptene,) is composed of  $\text{C}_{10}\text{H}_7\text{O}$ , being, as he infers, an oxide of a compound radical  $\text{C}_{10}\text{H}_7$ ; three equivalents of which radical, together with an equivalent of oxygen, he supposes to be the constitution of the eleoptene; a formula which makes it isomeric with camphrone. By the addition of two equivalents of oxygen to the eleoptene, there will be formed three equivalents of the stearoptene. This may explain the complete transformation of the oil into the camphor product.

That this solid substance is formed by the absorption of oxygen we may prove experimentally. If a fresh and unexposed specimen of the oil be deprived of moisture, which is present in the distilled oils, and exposed to a low temperature in an atmosphere of its own vapor, it solidifies, but resumes its fluidity at ordinary temperatures. Oil of monarda exposed to the air or to oxygen at  $32^{\circ}\text{F}$ . soon begins to deposit the stearoptene, which is accelerated by the presence of moisture. It does not appear that it absorbs the water, as when a portion has been kept over that fluid in a graduated tube so contrived that it was supplied with dry air, a large portion of the camphor was deposited, but the water remained the same in quantity.

When either the oil or stearoptene is treated with strong nitric acid, it is converted into a resinous matter. This resin maintained at a boiling temperature, and treated with portions of nitric acid until dissolved, is wholly transformed into oxalic acid. When we come to examine the products of decomposition, we find that the proportion of carbon in the ultimate product is much less than in the oil which was used. From the percentage of oxalic acid obtained, we may infer that an equivalent of the oil is converted into two equivalents of oxalic acid, six equivalents of carbonic acid, and seven equivalents of water, with oxygen derived from the nitric acid, thus:  $\text{C}_{10}\text{H}_7\text{O} + \text{O}_{17} = 2\text{C}_2\text{O}_3 + 6\text{CO}_2 + 7\text{HO}$ .



In its character the stearoptene partakes of the nature of true camphor. Both are formed by the addition of oxygen to a carbo-hydrogen radical. The formula of the oily base of camphor is  $C_{20} H_{16}$ . With  $O_2$  it forms camphor  $C_{20} H_{16}$ ,  $O_2 = 2C_{10} H_8$ ,  $O$ ; while oil of monarda is a tribasic oxide of the radical  $C_{10} H_7$ , which by the absorption of  $O_2$  is wholly converted into three equivalents of monarda camphor, thus:  $3C_{10} H_7$ ,  $O + O_2 = 3C_{10} H_7 O$ , a formula differing from that of camphor in containing two equivalents less of hydrogen.

If to monarda camphor we could add two equivalents more of oxygen, we should have the formula of anhydrous camphoric acid,  $C_{10} H_7 O_5$ . But when we attempt to oxidize monarda camphor, the oxygen displaces a part of its hydrogen, forming water, and converts it into a resinous matter, which, as I have said before, upon being further treated with nitric acid, is transformed into oxalic and carbonic acids and water. The formation of oxalic acid in this case is of some interest, as essential oils, and particularly those of a terebinthinate nature, are converted by nitric acid into resins, peculiar acids and carbonaceous products, but yield no oxalic acid.

*Philadelphia, Jan. 13th, 1853.*

## EMPLASTRUM EXTRACTI ACONITI RADICIS.

By WILLIAM PROCTER, Jr.

Having been requested by Dr. Francis Gurney Smith to prepare a plaster medicated with *aconitia*, the following formula was suggested by me as being less expensive than one requiring the pure alkaloid, yet possessed of equal, if not superior efficiency, because the greater bulk of the extract would prevent the plaster from masking the power of the active ingredient, and its ready solubility more favorable to the influence of the remedy.

Take of Aconite root, in coarse powder, four ounces.

“ Alcohol, sp. gr. 835, a sufficient quantity.

“ Adhesive plaster, three ounces and a half.

Moisten the powdered aconite root with six ounces of alcohol, and permit it to macerate twenty-four hours, then put it in a small displacer, and when properly packed, pour on gradually sufficient

alcohol to make a pint of tincture. Distil off three-fourths of the alcohol, evaporate the residue on a water-bath to a thick, syrupy consistence, then add the plaster previously liquefied, and stir constantly, until it is properly incorporated with the soft resinous extract, and cools. The resulting aconite plaster has a brown color, and homogeneous consistence, and weighs about four ounces troy. This plaster should be spread in a thin stratum on skin or oiled silk, and may be used several times when its application has not been too long continued at first.

Dr. Smith has employed this plaster in several cases of neuralgia, especially about the head, and has obtained from it the well-marked effects of aconite; in some instances so decided as to require the removal of the plaster for a time. He has also used it in painful tumors of the breast with much satisfaction.

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#### ON THE PREPARATION OF CHLORIDE OF ZINC.

BY BENJAMIN J. CREW.

Having been recently engaged in the manufacture of chloride of zinc in considerable quantities, and not being satisfied with the product when prepared strictly in accordance with the formula of our Pharmacopœia, I adopted a somewhat different method, and meeting with entire success, I have thrown together a few remarks which may perhaps be useful to others who have experienced the same difficulties. In the officinal formula the quantity of hydrochloric acid requisite to dissolve the given quantity of metallic zinc, is with propriety omitted on account of the variable strength of commercial acid. Any convenient quantity of zinc may be used, and requires between three and four times its weight of acid to completely dissolve it; or any convenient bulk of acid may be employed, and zinc added until effervescence ceases: either plan may be used without difference of result. Having obtained a neutral solution, it is filtered or strained, to separate the black sulphuret of zinc which has been formed. I then add the requisite proportion of nitric acid to oxidize any iron which exists in the commercial muriatic acid. The solution, upon the addition of the acid, assumes a dark brown color, which is dissipated by heat, leaving an orange hue.

I then add the precipitated chalk, as being purer and therefore preferable to ordinary prepared chalk, and proceed to evaporate to dryness, during which any iron that may be present separates as oxyde. The impure chloride is then dissolved in distilled or pure filtered water, and again filtered, and again evaporated. This last operation requires close and careful watching. The evaporation is continued longer than is generally thought necessary. With a very gentle heat, the directions given by the Pharmacopœia to evaporate to dryness, may be complied with, but owing to the exceedingly deliquescent nature of this salt, I think this an ineligible form; for if the bottle containing the chloride in a pulverulent form be left open even for a short time, it speedily forms a coherent mass, and becomes inconvenient for use. I therefore continue the evaporation over a brisk fire until what may be called the first stage of evaporation is completed, which may be known by dipping into the melted mass a glass rod. If complete, a white opaque pellicle immediately forms upon the rod, as soon as withdrawn. This may with propriety be called the aqueous fusion, and the salt may be poured on a marble slab. It chills very quickly, and becomes solid; but as this did not possess the requisite hardness and fineness, the heat was continued upon another portion, until it fairly passed into the igneous fusion, the frothing ceased, and the melted liquid became beautifully clear and of a high sp. gr., as a bit of broken glass readily floated on the surface. It may now be poured on a marble slab as before, and, when cool, broken to pieces and kept in well stopped vials secured by wax. As thus prepared, it is beautifully white and hard, though equally as deliquescent as when prepared in any other way, yet presents less surface to the action of the moisture of the air.

Before closing this paper, I wish to make a few remarks upon the crystalline nature of this salt, as I do not remember having met with any previous notice of it. At or about the time it begins to pass into the aqueous fusion, if a strip of glass be dipped into the solution and carefully watched as it begins slowly to solidify, the crystallization of this chloride may be readily seen. At first only a point or nucleus; it then steadily increases in size, when the real form of the crystal may be discerned,—acicular and radiant from one centre. This is conducted with

such perfect regularity, that the integrity of the circumference is completely preserved. By this time the whole surface of the glass is covered with these perfect and beautiful discs, gradually coalescing and forming one mass. These crystals, however, can be preserved only for a few moments, perhaps half a minute, as they speedily deliquesce and disappear. In one instance the vessel containing the solution was allowed to remain over the fire, which was nearly extinguished, over night, giving, of course, a good opportunity for the whole to cool very gradually. Upon examination next morning, it was found to be one mass of crystals, which upon application of heat were readily dissolved, and the operation completed as before described.

*Philadelphia, 4th mo. 6th, 1853.*

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#### INFUSUM JUNIPERI COMPOSITUM.

By THE EDITOR.

Having had occasion to prepare a variety of diuretics, for a member of my family affected with valvular disease, attended by dropsical effusion into the pleura and pericardium, none of them proved so successful as the infusion of Juniper berries with cream of tartar. The necessity of making the infusion every day, led to the adoption of the following formula, which was afterwards used with much satisfaction.

Take of Juniper berries, thoroughly bruised, four ounces.

Holland gin,        -        -        -        four fluid ounces.

Boiling water,       -       -       -       twelve fluid ounces.

Pour the boiling water over the bruised juniper, add the gin, mix them and let them macerate for twelve hours. The whole should then be thrown on a cotton cloth and expressed, and sufficient water added to the dregs and pressed out to make the infusion measure a pint.

The preparation thus made has an opaque brown color, and a decided odor and taste of the berries. When desirable, it may be made more active by rubbing one drachm of the oil of juniper with the bruised berries, then pouring the gin upon them, and after macerating an hour, adding the boiling water, and continuing the maceration for eight or ten hours longer. The liquid is then sepa-



rated by expression as above. When made by the last method, the infusion contains more of the oleo-resin of juniper in suspension, and is much less agreeable to the taste, but is more active and efficient. When the patient is troubled with gastric irritability, the first infusion is more appropriate. Whichever may be employed, the dose is from a tablespoonful to a wine glassful, mixed with a teaspoonful or more of cream of tartar, three times a day regularly. It is much better in prescribing juniper berries and cream of tartar for a patient, to direct the salt to be kept separate from the berries, and administered by measured doses with the infusion after it is made; because, when they are infused together, a large portion of the bitartrate crystallizes among the juniper dregs as the infusion cools, and is lost by straining the infusion.

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#### PHARMACEUTICAL NOTICES.

BY ALFRED B. TAYLOR.

##### *Fluid Extract of Serpentaria.*

Being desired by a Physician to make a strong Tincture of Serpentaria, a fluid extract was naturally suggested. The following form was used, and was found to afford a preparation containing all the virtues of the root in a very concentrated state:

Take of Serpentaria, bruised, ̄xii.

Alcohol and water, each a sufficient quantity.

Mix the serpentaria with 12 oz. alcohol, and allow it to stand for twenty-four hours; then transfer it to a percolator and pour alcohol gradually upon it until a pint and a half of filtered liquor is obtained. Place this in an evaporating dish and allow it to evaporate spontaneously until reduced to six fluid ounces. To the root, exhausted by alcohol, add water, and displace till it is exhausted, or until about three pints have passed; evaporate this portion in a water-bath to six fluid ounces, mix the two parts together and filter. Each ounce of this represents one ounce of the root—consequently, the dose of the root being from 10 to 30 grs., (and there being from 85 to 90 drops in a fluid drachm of this extract,) the dose would be from 15 to 45 drops.

\*[NOTE.—For a preparation analogous to the above, of half the strength, preserved by means of sugar, and suggested by Mr. John C. Savery, the reader is referred to vol. 23, page 119 of this Journal.—EDITOR.]

Having been called upon frequently by Apothecaries and others for the formulæ of the following preparations, (which, I believe, have not as yet appeared in print,) it was thought that their publication would be acceptable to the readers of the Journal—as they have been very extensively prescribed and used, both in this city and elsewhere. They are the prescriptions of Dr. John K. Mitchell, Professor in the Jefferson Medical College of this city:

R. Pulv. Rhei,	ʒij.
“ Aloes Socot:	ʒj.
Hydrarg: Chlorid: Mite,	ʒj.
Ant: et Potassæ Tart:	ʒ½.

Pulv:

Sig: Aperient Powder.

Take of Aperient Powder,	ʒij.
Powdered Soap,	ʒij.

Mix with water, and make into a mass, to be divided into 40 pills.

Sig: Mitchell's Aperient Pills.

R. Ext. Quassiaë,	ʒij.
Ext. Conii,	gr. x.
Ferri Carb:	gr. x.
Liq. Potass: Arsenitis,	gtt. x.

Mix and divide into 40 pills.

Sig: Mitchell's Tonic Pills.

#### LETTER RELATING TO THE SALE OF POISONS IN VERMONT.

[The following letter, elicited by our request for information on the subject of poisons, etc., though not intended for publication, we have thought best to publish as an encouragement to pharmacutists in other localities, to assist the Committee in carrying out the objects of its appointment. A little time devoted in this way by our distant brethren will be duly appreciated.—EDITOR AMER. JOURN. PHARM.]

*Bennington, Vt., March 18, 1853.*

W. PROCTER, JR., ESQ.

Chairman of Committee on Poisons, &c.

Dear Sir.—In the Journal of Pharmacy, March number, I notice a call for information on the subject of the “sale of poisons.”

Being the principal Druggist in this part of Vermont, and feeling a lively interest in all matters pertaining to the profession of pharmacy, I take this opportunity to present a few remarks in connection with the subjects under inquiry.

1st. You ask "whether any State or municipal laws exist regulating the sale of poisons?" I answer that *no* law exists in the State of Vermont, either *regulating* or *restricting* the *sale of poisons*. Indeed, the terms *sale of poisons*, *selling poisons*, &c., do not exist in the compiled statutes of Vermont.

2d. "If not, does any voluntary conservative action have place among druggists and apothecaries, and if so, how far?" The legitimate drug establishments of the State are few; the proprietors of those few establishments, however, sell no poisons without properly marking them as such. Indeed, I am credibly informed, no article leaves their shops without its appropriate mark or label. Of my own mode of dispensing poisons, &c., I will speak hereafter.

3d. "To what extent do grocers and general shopkeepers retail arsenic and other poisons used for destroying animal life?" In most of the larger towns of this State general shopkeepers are found who dabble in drugs and medicines, and in the small towns you find little stores, in which drugs, &c., are mixed up with all sorts of merchandize. At all of these shops you can buy arsenic, opium, and at many of them *strychnia* can be obtained. Poisons are not marked at all by these general dealers, and it is really surprising that so few accidents occur from such gross carelessness.

Having thus briefly answered your questions, permit me to present my own method of dispensing poisons and medicines generally.

1st. In dispensing poisons, I have made it an invariable regulation, to enclose the article within three wrappers, the outside wrapper being properly marked to designate the contents of the package. Of the active mineral poisons, arsenic is much the more frequently called for by the common people. I have a book which I call *Arsenic Sales Book*, in which I register the date of sale, name of buyer, quantity sold, amount received in payment, with a column for remarks. The other active mineral poisons are but seldom called for by the common people, yet, if sold, they are also marked properly. Of the vegetable poisons, *opium* is the only one called for to any extent, and I sell this drug in a much greater



quantity than it ought to be sold in a small community. I always mark it poison.

2d. In dispensing medicines in general, no article is allowed to go from my shop without its appropriate mark or label.

I opened a drug-shop in this place December 1st, 1843, and in the effort to obtain pure drugs and medicines, I have been materially assisted and encouraged by the entire medical profession of this county. \* \* \* \* \*

At the date given above, the distinguishing feature of physicians might safely be said to have consisted in their capacious "saddle-bags." Each member of the profession found this half-grown apothecary shop just as essential in his village practice, as for out-of-town business.

Their prejudices, naturally enough, were strongly in favor of the familiar saddle-bag; consequently, not a single prescription was sent to me the first year, (1844,) and less than fifty the second, (1845,) notwithstanding four physicians resided within a "stone's throw" of my shop, and in a village containing some 1500 souls.

I now adopted the following simple method to relieve the physician of his *old friend*, the saddle-bag. By the aid of the printer, I obtained a quantity of prescription blanks, had them bound in books of fifty each, and presented them to the physicians, with the request that they would use them freely, and to direct their patients to get them compounded at the most convenient shops, at the same time assuring them, that such as came to my establishment would be carefully compounded. The idea pleased them. The saddle-bag is not now used. The pocket-case has taken its place, and all express themselves highly pleased with the idea. I copy all prescriptions in a book, and paste the original in another book, and all are numbered to correspond with the package leaving the shop. \* \* \* \* \*

Pardon the encroachment on your time, while I remain, very truly,

Yours &c.

S. P. PECK.

16 ONTARIO  
COLLEGE OF PHARMACY  
44 GERRARD ST. E.  
TORONTO.



## BOTANY IN ITS RELATIONS TO PHARMACEUTISTS.

MR. W. M. PROCTER, JR.:

*Dear Sir,*—The season of flowers is rapidly approaching, and the idea of suggesting to your junior readers the advantages they may derive by devoting a part of their leisure time to the study of Botany, has presented itself with so much force, that I am constrained to avail myself of your pages. It is lamentable to what an extent this important branch of science, in its bearing on pharmacy and *materia medica*, is neglected, not only by pharmacutists in business, but by students of pharmacy and of medicine. No stronger evidence of the truth of this need be obtained, than the general ignorance manifested by druggists and drug-clerks when you present living or dead specimens of plants to them for recognition. They are ignorant of the mere contour of many of the more important indigenous medical plants, not to speak of their structural characters and habits. One cause of this ignorance is, the fact that most of the medical plants cultivated or collected for use in the United States, are derived from the Shakers, (or those who prepare them similarly,) who completely destroy the configuration of the plants by section and pressure for convenience of packing, and thus prevent them from being recognized. It should be part of the education of a pharmacist to study indigenous plants in their native localities, or in the gardens, and not merely their general appearance, but critically as regards structure development, botanical affinities and classification. One of the most beautiful points of systematic botany is the parallel relation that exists between the natural affinities of plants and their chemical constitution, and consequent medical qualities.

Many years ago, it was common for druggists and apothecaries to collect plants, or have them collected and dried under their own superintendence, which is yet done to some extent by a few. This plan affords a good opportunity to apprentices to become familiar with a limited range of plants, and is a part of practical pharmacy that is sadly overlooked.

The pleasure of a ramble in the woods and fields is much enhanced by making it subsidiary to the pursuit of botanical knowledge; although to some it may at first *appear* tedious, a little perseverance will give such an insight of the hidden beauties of

the subject, that its study becomes an intense and self-supporting pleasure. Provided with a book-shaped tin box, (or in lieu of this, a yard of oiled silk and a sheet of paper,) a lens and a strong knife, the student, if a city resident, may quickly be wafted within walking distance of excellent botanical localities, by the omnibuses, cars or ferry boats, and after spending an afternoon pleasantly in recognizing and collecting plants, will return invigorated in health, and loaded with specimens that will occupy the leisure of several subsequent days in their analysis and preservation. This practical knowledge is of lasting service in the conducting of business. With Gray's, Eaton's, or Mrs. Lincoln's Botany at his disposal, all the important indigenous plants may be recognized, and once well learned are never forgotten. It is gratifying to notice that some attention is granted to this science in the curriculum of the Philadelphia and New York schools of Pharmacy; but until the study is accompanied with practice in the manner mentioned, it will be difficult to excite more than a passing interest in the lecture room. Trusting that this intrusion on your pages may incidentally benefit some of your readers, I sign myself, with respect,

A PHARMACEUTIST.

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#### PHARMACEUTICAL GLEANINGS FROM VARIOUS SOURCES.

*Anisated Balsam Sulphur.*—M. E. ROBIQUET recommends that this preparation should be made by heating one part of sulphur in a flask to about 400° F. until it assumes the ductile condition, when it is suddenly cooled. Four parts of oil of aniseed is now added, the flask imperfectly corked, and the two digested together in a water bath (boiling) for half an hour. After removal from the bath it is suffered to settle for 24 hours, and when perfectly limpid decant it. Thus prepared the preparation contains 8 per cent. of sulphur, which is one-seventh more than that made by the old formula, which is due to presenting the sulphur in the modified or ductile state.—*Journ. de Pharm.*

*Hydro-alcoholic Extract of Ergot.* By M. STICKEL.—Displace ergot in powder with its weight of ether to remove the oil, dry the residue, and digest it in six times its weight of water during two days at about 167° F. The aqueous infusion is now decanted

evaporated to one-fourth, and, when cold, treated with alcohol as long as that liquid causes a precipitate. The liquid is now filtered and evaporated to the consistence of honey, and set aside.\* The residue of the ergot is then mixed with its original weight of alcohol, digested during three days, expressed and filtered. The liquid thus obtained is mixed with the syrupy aqueous liquid and evaporated to the consistence of a thick extract. The product amounts to about 21 per cent. of the weight of the ergot, and, according to M. Stickel, possesses advantages over any of the preparations heretofore recommended, embracing as it does all the active products isolated in the processes of Wiggers, Bonjean, Hazer and Ebers.—*Journal de Chem. Méd.*

*Hydro-alcoholic Extract of Matico.*—Treat powdered matico with a mixture of three parts of alcohol 835° and two parts of water, by maceration and displacement, evaporate the tincture carefully on a water-bath to the consistence of an extract. This extract has a black color, a bitter taste, and a decided odor of the plant. It is employed in the form of pills and to make a syrup.—*Ibid.*

*Liquid to Preserve Dead Bodies.*—M. SUQUET recommends the following liquid as an injection for preserving bodies from decomposition. Take a solution of carbonate of soda, sp. gr. 20° to 22° Baumé, pass into this liquid a current of sulphurous acid obtained by heating a mixture of sulphuric acid and saw dust, until all the carbonic acid is displaced and the sulphurous acid is in excess, when the solution should have the sp. gr. 24° B. It is then poured into a tub containing zinc filings, and allowed to remain until it becomes neutral, which is known by its not effecting polished steel when, after being dipped in it, it is exposed to the air.

A gallon to a gallon and a half of this liquid is necessary for one body, which should be thrown in by one of the carotid arteries.—*Ibid.*, Dec. 1852.

*Fly Poison without Arsenic.*—The following preparation is much used in Switzerland for the destruction of flies:

Quassia 8 parts, water 500 parts, molasses 125 parts. Boil the quassia and water ten minutes, strain and add the molasses.

Flies are attracted by this liquid and are soon killed by it.—*Ibid*, Dec. 1852.

*Hainaut's Dentifrice*.—Powdered tormentilla 80 parts, powdered orris root 40 parts, cream of tartar 20 parts, fused chloride of calcium 4 parts. Reduce the chloride rapidly to powder and mix it with the other ingredients.

*Insolubility of Alum in Brandy*.—Physicians sometimes direct a mixture of alum and brandy as a bath. When 100 grains of powdered alum are macerated for several days in 1000 grains of French brandy, sp. gr. 947°, the filtered liquid contains hardly a trace of the salt, as 100 grains of it on evaporation yielded less than half a grain of extract-like matter with but little taste of alum.

W. P., JR.

*Bottle for Dropping Liquids*.—Mr. GEORGE DYMOND, of Manchester, England, suggests a decanter-shaped bottle with a hollow stopper of peculiar construction for dispensing liquids by drops. The bore of the stopper follows its axis until above the lip of the bottle, when it divides to the right and left so as to produce two apertures parallel with each other, one of these being much larger than the other. When the bottle is filled with a liquid and inclined with the small aperture down, “a perfectly regular succession of drops of uniform size escape, the air being at the same time admitted through the opposite aperture. The position of the bottle being reversed, a larger supply of liquor is obtained by means of the large aperture of the stopper, whence it issues in a moderate and uniform stream.”

The author considers this bottle particularly valuable in reference to volatile liquids, like ethereal solutions, hydrocyanic acid, etc., where loss by evaporation is liable to occur. There is a glass cap to cover the top of the bottle, ground to fit the lip, which prevents evaporation when the bottle is not in use, and adapts it for holding test liquids.—*Pharm. Journ.*, March, 1853.

*Remedy for the Sting of Bees*.—M. GUMPRECHT recommends the expressed juice of the honeysuckle (*Lonicera caprifolium*) as a remedy for the stinging of bees. The stung place is to be rubbed with the juice, which may be kept in closely stopped bottles for this purpose.—*Chem. Gaz.*, Jan. 15.





The pyrophosphate of iron, corresponds to the soda salt, and has the formula,  $2\text{Fe}^2 \text{O}^3 + 3\text{PO}^5$ . It is obtained by double decomposition between ter-sulphate of iron and pyrophosphate of soda. It is insoluble in water, but is soluble in a solution of pyrophosphate of soda.

I will now speak of the syrup of pyrophosphate of iron.

Take of Ter-sulphate of iron, in powder, - 55 grains.

Water, - - - - - 1 fl. oz.

Dissolve the salt in the water, cold, by occasional agitation for several days, or it may be more quickly effected by digestion at a moderate heat in a flask placed in a water bath.

On the other hand,

Take of Pyrophosphate of soda, crystallized, 462 grs.

Pure water, - - - - -  $7\frac{1}{2}$  fl. oz.

Distilled mint water, - - - - -  $3\frac{1}{2}$  fl. oz.

Dissolve without heat, and add to the solution the solution of sulphate of iron previously made and agitate. The precipitate which first forms quickly, redissolves when the liquid is filtered and poured on 19 ounces troy of white sugar, contained in a bottle. Dissolve without heat. It is necessary to make the solution without heat, or, at least, below the temperature of  $120^\circ \text{F}$ ., otherwise the syrup will assume the color of wine dregs, and at  $160^\circ$  to  $180^\circ \text{F}$ . it becomes very deep: A tablespoonful of this syrup (about five drachms troy,) contains 2 centigrammes (about  $\frac{1}{3}$  of a grain) of iron in the state of double phosphate.

If the ter-sulphate of iron is not at hand, it may be prepared for the occasion quickly as follows. For the quantity necessary for the preceding formula.

Take Crystallized proto-sulphate of iron,  $77\frac{1}{2}$  grains

Sulphuric acid, - - - - - 25 grains

Nitric acid, - - - - - Q. S.

Put the sulphate in a capsule with a little water and the sulphuric acid, heat and add nitric acid in drops, until the mixture ceases to disengage nitrous fumes; then evaporate to dryness at a moderate heat. The product is the ferric salt free from excess of acid.—*Jour. de Pharm.* Jan. 1853.

## MUNIFICENCE OF M. ORFILA.

[Through the *Journal de Pharmacie* for February, 1853, we learn that M. Orfila, the distinguished chemist and toxicologist of Paris, having, for some time, intended to bequeath certain sums of money for scientific purposes, to several of the institutions of France, determined to make them donations instead of bequests; and, on the 1st of January, addressed letters to the several representatives of the institutions to be benefited, announcing the fact. The whole sum presented is 121,000 francs. The Orfila Museum, the Academy of Medicine, the Preparatory Medical Schools of Bordeaux and Angers, and the School of Pharmacy of Paris, are the recipients of the bounty. The following letter to the Director of the latter institution we translate entire.—*Editor Amer. Pharm. Jour.*]

## LETTER OF ORFILA TO THE DIRECTOR OF THE SCHOOL OF PHARMACY OF PARIS.

*Paris, January 1st, 1853.*

MR. DIRECTOR AND DEAR COLLEAGUE :—Thirty-two years as an Examiner in the Special School of Pharmacy of Paris, has enabled me to appreciate the distinguished merit and the honorable zeal of its professors, as well as the remarkable aptitude of most of the candidates who have assiduously followed their instruction. I will preserve, while I live, a grateful remembrance of the happy relations which have unceasingly existed between you, your colleagues, and myself, and I am happy in feeling able at this time to furnish you a proof of the desire which animates me, by contributing some little to enhance the renown of an institution which is honorable to France, and of which you are the worthy director.

I place at your disposal an inscription of 500 francs per annum in the three per cents, designed to found a prize of 1000 francs, which shall be awarded every two years, dating from the commencement of the session for the year 1856. This inscription represents a sum of 14,000 francs, (at 84 the cost price.)

This prize is not to be divided. If it is not awarded, the same question is to be again put up for competition, and the prize will be then 2000 francs. If the prize is not gained the second time, the same question will be proposed for the third time, the prize being 3000 francs; if, notwithstanding the delays, the question has not been properly answered, and the prize not adjudged, the sum of 3000 francs is to be paid into the treasury of the Association of Physicians of the department of the Seine, which I founded in 1833.

Allow me, Mr. Director, to state briefly a certain number of questions, which, in my opinion, should be first proposed.



1st. To extract from the most important compound medicines all the proximate principles, or other active substances, belonging to them. We should not believe, because an alkaloid, or any other body possessing a certain degree of power, has been obtained from a drug, that science can do no more; in fact, a substance extracted from a compound medicine may account for a certain portion of its therapeutic effects, but often, many other effects are due to ingredients not isolated. It is necessary to be quite certain in this regard, that all which relates to the action of compound medicines on the animal economy may be completely understood, and the part which the different active principles take in this action ascertained. This question will furnish, without doubt, a number of subjects for prizes.

2d. To determine, by experiment, what are the substances in the several kingdoms which should never be associated in the same formulæ, because they decompose each other, with products completely inert. To ascertain, on the contrary, which are the substances, which, in combining and in decomposing, yield medicines gifted with a certain activity useful to the physician. To indicate the kind of changes that occur in these various substances, and the nature of the new compounds formed.

3d. To explain the best processes for discovering certain sophistications which have not yet been the object of serious study.

4. To decide what modifications certain drugs, of vegetable and animal origin, will undergo by continued exposure to heat and light, and to dry or moist air, etc., and to say whether the products which result from the alteration of these drugs will cause accidents, in case they are employed in medical practice.

5th. To analyze the saliva, the urine, and the perspiration in the principle acute diseases called specific, so as to be able to state the changes that occur in those fluids; added to which, the expired air should be examined.

6th. To search if, in lying-in women, the milk partially abandons the galactiferous organs, and is carried to other vessels, and especially if, in the so-called milk diseases, to which women recently confined are sometimes subject, the milk has been carried to the bladder, into certain serous cavities, &c.

7th. To submit the mineral waters, yet but little known, to analysis, and to re-study those which enjoy great celebrity, with the object of ascertaining whether some new active substances cannot be



discovered. If the problem proposed by the Academy of Medicine, in 1851, on the occasion of the Capuron prize, has not received a satisfactory solution, it may be removed from competition.

Such, Mr. Director, are the questions which need elucidation. The demands of science will lead you, I have no doubt, to propose other questions, either before or after those which have been indicated. I am satisfied of the sagacity of the Professors in this matter, and accept in advance the programme they may offer.

Receive, my dear colleague, the assurance of my distinguished consideration and affectionate regard,

ORFILA.

*Jour. de Pharm., Feb. 1853.*

### ON THE MANUFACTURE OF WAX CANDLES.

(From the Reports of Juries of the Great Exhibition.)

Under the name of wax are included substances of various origin, and of very different composition. The wax employed in the manufacture of candles is secreted by the honey bee, which has the power of producing this substance from its food (sugar). At one time it was thought that the bee collected the wax ready formed from plants, until Liebig advanced the contrary opinion, which was subsequently corroborated by the experiments of MM. Dumas and Milne Edwards.

A wax known as Chinese wax, and resembling spermaceti in appearance, was formerly supposed to be a vegetable wax; but the researches of Sir George Staunton and M. Stanislaus Julien have demonstrated that it is the secretion of a male insect, the *Coccus ceriferus*, which deposits it on the tree on which it feeds, particularly the *Rhus succedaneum*. We owe to M. Brodie a knowledge of the true chemical composition of wax. This chemist, by his recent elaborate researches, has shown that Chinese wax is a compound of a peculiar fatty acid (*cerotic*) and the oxide of an alcohol radical (*cerotyl*), and is consequently cerotate of oxide of cerotyl. Ordinary bees'-wax he finds generally to contain twenty-two per cent. of free cerotic acid, which is soluble in alcohol, and, with potassa, forms readily a soap. The residue, which is nearly insoluble in alcohol, and which has been usually called myricin, he has shown to be a compound of palmitic acid and the oxide of another alcohol radical (*melissyl*),

that is, palmitate of oxide of melissyl. He has likewise been able to prepare from wax two new solid hydrocarbons similar to paraffin.

Paraffin would be much too costly to be converted into candles if made from wax, as its preparation entails a considerable loss of material; it is, nevertheless, desirable that it should be obtained cheaply from some source, as it is much better adapted than any other substance for illuminating purposes, from its containing no element besides carbon and hydrogen, which are united in equal equivalents. It is therefore exactly of the same composition in a hundred parts as olefiant gas, which gives to ordinary coal and oil gases their illuminating power. Paraffin candles have been made from paraffin obtained by distilling bituminous schist; but far more interesting specimens are those produced by James Young, which seem to realize the great problem which the rare sagacity of Liebig pointed out as far back as ten years ago. "It would certainly be esteemed one of the greatest discoveries of the age," says he, "if any one could succeed in condensing coal-gas into a white, dry, solid, odorless substance, portable, and capable of being placed upon a candlestick or burned in a lamp." Now, this very problem Mr. Young appears to have accomplished by distilling coal at a comparatively low temperature, whereby he obtains, instead of gas, the product of intense heat—a mixture of liquid and solid substances; the former capable of being burned in lamps like sperm oil or of being used for lubricating machinery, the latter yielding a beautiful mould candle, as solid and white as any prepared from paraffin from other sources. The Reporters have not as yet been able to obtain a fuller account of the economical bearings of Mr. Young's process, which will most likely be considered in the Report upon another class; but they confidently hope that this truly beautiful discovery will not meet with similar difficulties as the plan proposed some years ago for making paraffin candles out of Irish peat. If coal-paraffin can actually be obtained in sufficient quantity and at moderate cost, we may witness another revolution in the processes of illumination; and the brilliant discoveries of Chevreul, but lately threatened by the splendor of the electric light, may be eclipsed by the general adoption of solidified coal gas candles.

In most countries wax intended to be made into candles is previously bleached by a process presently to be described. That this, however, is not always the case, we find by specimens exhibited in the Egyptian and Tunisian Courts. The candles in the latter, which we may infer resemble those of the classical ancients, are true yellow wax "dips," and have a very ungainly appearance. The bees'-wax from which they are made is principally produced in the province of Kirwan; and the primitive method usually adopted for their manufacture consists in merely melting the wax in a proper vessel, and then dipping the wick repeatedly into it. Although such is the usual mode, the wax is sometimes bleached, and, of course, finer candles produced: but none such were exhibited. No animal fat is employed in Tunis for the manufacture of candles, although stearic candles of European manufacture are imported, and are in general use.

Wax is more valuable when bleached, not only on account of its greater beauty, but also from the removal by this operation of impurities which would clog the wick during combustion. It may be bleached by chlorine; but the process is of no value, because its constituents retain a portion in combustion, and hence hydrochloric acid is given off in burning.

The method of bleaching employed is very simple, although tedious. The following, with some trifling variation, is the plan adopted in most countries:

*Wax bleaching.*—The wax is cut up into small pieces and placed in a vat, into which steam is made to pass through a perforated coil of pipes; a small quantity of very dilute sulphuric acid being added, in the proportion of one pint measure of strong sulphuric acid (oil of vitriol) to one ton of wax, and the whole well agitated for some time. This addition of sulphuric acid facilitates the separation of impurities which subside into the acidulated water.

As soon as, by subsidence, the wax has become bright, it is removed into a trough, with holes in the bottom about the size of an ordinary quill. The melted wax runs through these holes in small streams on to a wooden cylinder, which is made to revolve, and the lower half of which is immersed in a cistern of cold water. The motion of the cylinder carries a layer of water, on which the streams of wax fall and form exceedingly thin ribbons, varying from half an inch in breadth. These ribbons,



by the revolution of the cylinder, dip under water, and as they rise upon the opposite surface are removed, and spread out thinly and evenly on tables placed in the open air, so as to be exposed to the action of the sun and air for a period varying from five to ten weeks. Once or twice during that period the wax is again subjected to the same process of melting; it requires also frequent turning, so as to present every portion to the bleaching agency of sunlight.

The fusing point of wax is raised by bleaching, for yellow wax fuses between  $62^{\circ}$  and  $63^{\circ}$  C. ( $144^{\circ}$  and  $146^{\circ}$  F.), and bleached wax between  $64^{\circ}$  and  $65^{\circ}$  C. ( $147^{\circ}$  and  $149^{\circ}$  F.)

All waxes are not found to bleach with equal facility, according to the statement of Mr. Barclay. For example, English, Hamburgh, Odessa, Portuguese, Mogadore, Zanzibar, East and West Indian, and North American waxes bleach very readily, whilst those from Cuba, Dantzic, Konigsburg, Gambia, and Gabon, are only bleached with difficulty, and seldom acquire a good color.

Notwithstanding the difficulty with which Gambia wax is bleached, and its liability to become of a rusty brown, that country furnishes the greater part of the wax which is imported into Great Britain. Large quantities are likewise imported from Mogadore, the East Indies, particularly Ceylon and Singapore, and North America. The Mogadore wax is frequently largely adulterated with fat.

From Brazil a curious wax has been imported, the product of a black bee, which hives under ground. It is soft, and exceedingly tenacious, and of a dark mahogany color. It does not appear in the slightest degree bleached after exposure to the sun. A considerable quantity might be imported, but no use has yet been found for it.

The English wax is the most esteemed of all; but the small quantity produced is absorbed for various purposes without bleaching, on account of its fine quality, and its brightness and fragrantcy.

In 1850 the quantity of bees'-wax imported for home consumption into Great Britain was 10,761 cwt., besides a small quantity of vegetable wax amounting to only five cwt. There is no duty on wax. 1067 lbs. of wax candles were also imported, and paid £9 duty.



Wax is not well adapted for moulding on account of its tendency to adhere to the mould, and its great contraction in cooling; and though these difficulties may be overcome, yet it is found more advantageous to make wax candles in the manner about to be described, as they are found to burn much better.

The first process consists in warming the wicks in a stove, and then suspending them to a hoop placed over a vessel of melted wax. The workman pours the melted wax with a ladle on to each wick in succession, and at the same time causes the wick to revolve on its axis by the motion of the fingers. When the candles are about one-third made, they are allowed to cool for a time, and the operation of pouring repeated until the candles are about half made, which is ascertained by the eye or by weighing. Whilst still warm they are removed from the hooks and subjected to a process of rolling between two marble slabs, so as to render them uniform in thickness. The upper end of each candle is now formed by cutting down the wax to a metal tag which covered one end of the wick. The candles are then again suspended to the hoops, the end which had previously hung downwards being now upwards, and the operation of basting and rolling repeated as often as necessary. Lastly, the lower ends of the candles are cut off to make them of equal length.

The wicks of wax candles are always made of twisted unbleached Turkey cotton, the fibre of which appears better to resist the temperature of the highly heated wax during combustion. Plaited wicks are not adapted to wax candles, as the plaiting, by diminishing the capillary action, entails the employment of so large a wick that it obscures the light, besides which it is apt to curl round and round in the flame, and to collect a quantity of soot.

The large wax candles used in churches are formed by laying the wick on to a slab of wax, which is then folded over on the wick, and the candle finished by rolling.

Long wax tapers are made by winding the wick on a drum, and then leading it under a guide roller, placed in a trough of melted wax. From this it passes through a series of holes, progressively smaller, on to a second drum, the operation resembling somewhat that of wire-drawing. A little turpentine is added so as to render the wax pliable enough to wind.—*London Pharm. Journ.*, Feb., 1853.

## ON THE DETERMINATION OF THE COMMERCIAL VALUE OF INDIGO.

Wittstein advocates the use of the deoxidation test proposed by Berzelius and Pugh, and considers that the discredit into which it has fallen is the result of unfounded prejudice. He further points out the several defects of the other modes of testing indigo. The use of sulphuric acid as a solvent of the blue coloring matter is objectionable; first, because it takes up other constituents of indigo, partly organic, and worthless as dying materials, partly inorganic; secondly, because there is no means of separating the indigo blue from the other dissolved substances. He considers the method proposed by Reinsch, of determining the commercial value of indigo by observing the intensity of color of the sulphuric acid solution at a certain definite point of dilution as of small value, inasmuch as it gives only relative results, and that with no very great accuracy. Of the actual percentage of blue coloring matter it gives no indication.

The use of chlorine he considers as still more open to objection; in the first place, because it furnishes only relative results, and in order to obtain absolute results, it must be ascertained how much chlorine a certain weight of pure indigo blue requires for its decolorization; secondly, commercial indigo contains various other organic substances, colored and colorless, which likewise take up chlorine, consequently the percentage of indigo blue, calculated from the quantity of chlorine consumed, is always too high and requires correction, for it cannot safely be assumed that the chlorine acts first upon the indigo blue.

In order to obtain some positive data connected with the use of the chlorine test, Wittstein made some experiments to determine the quantity of chlorine requisite for the decolorization of a certain weight of pure indigo blue, assuming at the outset that this quantity was constant. He was, however, unable to arrive at any practically available results. He used the solution of indigo highly diluted; the operation was conducted in a long-necked flask, in order to avoid any interruption of the action by the renewal of water which had evaporated, and the solution of salt was added at regular intervals; notwithstanding all these precautions the quantities of chlorate of potash requisite to produce decolorization in several successive experiments were very

unequal. He considers that these discrepancies are dependent upon circumstances with which we are not sufficiently acquainted; for instance, the duration of the process, a small quantity of salt producing as great an effect in a certain time, as a larger quantity in a less time; but when the reaction occupies too long a time, the liquid becomes concentrated and the result impaired. The decolorization of weak solutions cannot be effected at the ordinary temperature only after the lapse of some time; if they are employed at an elevated temperature the discrepancy in the results is increased still more.

Wittstein, therefore, comes to the conclusion, that the old reduction test should be again adopted, since it furnishes not merely relative, but absolute and tangible results, which, when a few precautions are taken, are very trustworthy. It is, moreover, easy to carry out, and does not occupy more than two days. He gives the following directions for its application:

Ten grains of indigo are rubbed with water in a porcelain mortar, to this twenty grains of hydrate of potash are added, together with a few drops of water, the rubbing being continued, and then forty grains of sulphate of iron, the mass mixed with water, so as to form a thick paste, and introduced into a six ounce stoppered bottle, which has been previously weighed; the mortar should then be rinsed and the bottle nearly filled up with water. After inserting the stopper the whole is weighed and well shaken for some time. After the lapse of a few hours the indigo is decolorized and dissolved. The mixture is then allowed to settle, the clear liquid is poured into a glass cylinder as completely as possible, and the bottle again weighed. The clear liquid is then to be treated with hydrochloric acid, the blue precipitate collected upon a weighed filter, washed with water, dried and weighed. By means of a proportion it may be ascertained how much indigo blue is contained in the ten grains of indigo; if, for instance, the contents of the bottle weighed 3140 grains, the residue left on decantation, 535 grains, and the 2605 grains of clear liquor yielded 2.5 grains of indigo blue, then:—

$$2605 : 3140 = 2.5 : x$$

$$x = 3.01.$$

Consequently, the indigo examined would contain 30.1 per cent. of pure coloring matter.—*Vierteljahresschrift für prakt Pharmacie*, from *London Pharm. Journ.* March, 1853.



## ON THE MEAT BISCUIT OF GAIL BORDEN.

By B. W. M'CREADY, M. D.

The preservation of animal food, by which the surplus products of one section of country can be made available for the use of another, and by which, too, it can be made serviceable in long journeys by land or sea when other supplies cannot be obtained, is an object of the highest importance. The employees of the Hudson's Bay Company convert their meat into what is called pemican. The muscular parts of the animal are cut into thin strips, thoroughly dried, reduced to powder, and mixed in proper proportion with melted fat. This answers perfectly the purposes for which it was intended. All the nutriment of the meat is preserved, it is compact, easily transported, and keeps for a long time, particularly in high latitudes. There are objections, however, to the process, which prevent it being used on a large scale.

In curing meat by salting it, the salt acts mainly by abstracting moisture from the meat. When fresh beef is covered with dry salt, the salt soon becomes moist, and is finally dissolved. The water is supplied by the beef; the latter is reduced in bulk, it becomes drier and corrugated. The same process goes on when meat is placed in strong brine, and the abstraction of moisture continues for a considerable time, until the greatest possible amount is withdrawn, and the meat becomes dense and hard. Unfortunately, the moisture does not consist of simple water; it contains, dissolved in it, various salts, of which potash is the principal base, and forms what has been termed the juice of the flesh. Now, in the living animal, these salts play an important part in the wonderful processes which constitute nutrition. During life, together, with the other materials of the body, they are exposed to constant waste, and need to be constantly replaced. Salt meat, deprived of these necessary ingredients, which are to some extent replaced by the salt itself, does not contain all the elements which are necessary to perfect nutrition: consequently, those fed on it exclusively for any length of time become ill, they are affected with scurvy.

Mr. Gail Borden, of Galveston, Texas, residing in a land where cattle are numerous, and meat exceedingly cheap, has at-



tempted another method of rendering the abundance of his adopted State serviceable in supplying the wants of other countries, in that respect less favorably situated. In doing this, Mr. Borden has hit upon a preparation, which, though it may not be all its more sanguine friends claim, is still exceedingly useful, and merits, perhaps, the encomium which Professor Lindley, in his lecture on the results of the Great Exhibition of 1851, in London, assigns to it, as being the most important of the many wonderful things which were there exposed for the admiration of the English public.

In the preparation of the Meat Biscuit, according to the specification of the patent, meat from animals in good condition, and fresh from the slaughter-house, is divided into small pieces by means of a cutting machine, and is then boiled in a large quantity of water for sixteen hours. The soup thus made is passed through strainers of wire-cloth, and then evaporated by steam heat in a pan or tub, or by means of the vacuum-pan, to the consistence of thick treacle. Previous to, and during this process, all the fat which rises to the surface is removed. With the extract thus obtained, good flour is incorporated, until the whole attains a consistence proper for rolling into a thin layer, which is then cut up by a common biscuit machine. The biscuits are then baked in a slow oven until they are thoroughly crisp and dry. The quantity of flour employed, according to Mr. Borden, is about three parts by weight to two parts of the syrup, and eleven pounds of beef produce one pound of extract. The biscuits are afterwards ground to a coarse powder, and packed away into air-tight casks or tin cases.

In this process, it will be observed, that in the first place all the fat is removed; in the second place, as neither fibrin nor albumen are, to any extent, soluble in boiling water, they likewise will be separated by the wire gauze through which the decoction is strained. The extract can contain then only the flocculi of coagulated albumen, which escape through the meshes of the strainers, together with a minute portion of the albumen, which, according to Dr. Bence Jones, is altered by the continued boiling, being rendered soluble, and converted into what Dr. Jones terms albuminose, the gelatine, the principles kreatine, kreatinine, inosinic acid, which in a comparatively recent period,

have been discovered to exist in flesh, and the various salts which form an important ingredient of its juice.

In the part which flesh, taken as food, plays in nutrition, it is now generally admitted, that the fat serves as respiratory food, the carbon and hydrogen of which it is composed combining with oxygen in the course of the circulation, and becoming converted into carbonic acid and water, and thus maintaining the animal temperature. What escapes oxidation is either stored away directly as fat, for the future use of the system, or passes out of it with the various excretions. The fibrin and albumen serve mainly to nourish the muscles, imparting by their decomposition strength and activity to the body and maintaining the activity of the heart and of the various other muscles of organic life.

It cannot consequently be admitted that the meat biscuit, or any similar preparation, contains the whole nutriment of the flesh from which it is made; on the contrary, the fibrin, the albumen, and the fat, which in reality constitute its most nutritive portions, are removed, and, for all purposes of nutrition, lost. What, then, are its advantages, and what purpose does it really serve in the human economy.

"Fresh meat when incinerated," says Liebig, "leaves three and one-half per cent. of the weight of the dried flesh as salts. Meat, exhausted by boiling, leaves hardly one per cent. Ten pounds of fresh meat yield in all, 42.93 grms. (two and a half oz. avoirdupois, or 662.8 grains;) but when these ten pounds are exhausted by lixiviation and boiling, 544.7 grains of the 662.8 enter the soup, and there remains in the meat only 118 grains. The fresh meat contains in its ash upwards of 40 per cent. of potash, the exhausted flesh only 4.78 per cent. of that alkali." It is on the presence of these salts, we believe, that the restorative effects of soup and of extracts of flesh mainly depend. They are essential ingredients of the body, and are necessary in the minute chemical changes of which vital activity is the product; they are constantly passing away with the excretions, and required to be constantly renewed; and in the form of aliment under consideration, they are presented to us in a condition and in proportions best suited for immediate assimilation.

Liebig attributes much of the effect of extract of flesh to the kreatinine, a nitrogenous compound, somewhat analogous to

theine in its composition, and which exists in the juice of the flesh in exceedingly minute quantity. There is no proof, however, that kreatinine produces any such effect, and it is more probable that this substance is merely one of that series of bodies, the result of the decomposition of the tissues, which, commencing with muscles and nerve, terminates with urea.

In his biscuit, Mr. Borden unites wheaten flour in large proportion, with the extract of meat. He thus replaces the animal fibrin and albumen by the gluten of the wheat, while the starch, as respiratory or heat-producing food, takes the place of animal fat; the whole forming an economical, portable, and nutritious food, which can be preserved for an indefinite length of time. Biscuit, which had been in the Arctic ocean with the Grinnell Expedition, and another portion, which had made the voyage to Australia and back, was perfectly unaltered, and when cooked, formed as palatable a soup as could be made directly from fresh meat.

The real merits of Mr. Borden's preparation can then be very briefly summed up. It affords a cheap and nutritious aliment, perfectly suited to the wants of convalescent patients, and in hospital practice must be invaluable.

On long voyages, it affords a nutriment abounding in those substances the want of which renders the continued use of salt provisions so unwholesome. It will probably be found beneficial in the treatment of scurvy, and will do much to prevent its occurrence.

Under similar circumstances, it affords a change of diet, which could not otherwise be obtained, unless at a greatly increased expense. Its cheapness renders its use for ordinary consumption in families a matter of economy.

Finally, it is compact, portable, and may be preserved unaltered for a great length of time.—*N. Y. Jour. Pharm.* Feb., 1853.

[The following is Mr. Borden's patent.—*ED. JOURN. PHARM.*]

*Patent granted to GAIL BORDEN, JUN., for Improvements in the Preservation of certain Animal and Vegetable Substances.*—This invention consists in combining flour, farina, meal, or pulverized biscuit with a concentrated extract of the nutritive portions of animal flesh, and drying or baking the same, so as to form a portable desiccated meat-bread or biscuit, containing a large quantity of nutriment in a small bulk, and suited for the use of shipping, armies, emigrants, travellers, hospitals, and for family use.



In carrying out this invention, the patentee takes animal flesh, of any kind suitable for eating, that is fat and in good condition ; and in order to extract all its nutritive juices, he macerates it by boiling in a quantity of water until all its nutritious or alimentary properties are obtained in the decoction. The extract or decoction is filtered through strainers of wire-cloth, and further defecated by settling ; after which it is reduced by evaporation to about the consistency of thick treacle. The evaporation may be effected in a pan or tub, with a steam-pipe coiled at the bottom, or by the vacuum process employed in sugar refining ; and previous to and during this operation, all the fat or oily matter that rises to the surface is to be skimmed off, or otherwise removed. The animal extract, which has been reduced to the above-mentioned consistency, is mixed with flour, farina, meal or pulverized biscuit, until a dough is formed sufficiently stiff to be rolled into a convenient form, and cut into pieces by a common biscuit machine. By mixing the flour with the extract in a hot state, the dough is rendered stiffer when cold, and more of the extract is combined with a given quantity of flour, which may, if preferred, be kiln-dried. The dough is desiccated in a drying chamber, or baked in a kiln or oven. The heat employed for this purpose may be equal to that of an ordinary oven after a batch of bread has been baked in it. The dough should be baked slowly, and with great care, until it attains the same degree of dryness as the common biscuits or cracknells. The biscuits manufactured in this manner may be ground into meal for greater convenience in cooking, and may be packed, either in the state of meal or unground, in air-tight casks or cases, or in tight bags of gutta percha, varnished cloth, or other material that will keep out air and moisture.

To make soup, the biscuit is ground or pulverized, and stirred into sufficient cold water to form a thin batter, which is allowed to stand from five to twenty minutes ; and then it is added to boiling water, care being taken to stir frequently during the process, especially before it boils. The boiling is continued from ten to thirty minutes, according to the fineness of the biscuit-meal, until it is dissolved in the water ; and salt, pepper, and other condiments are added, to suit the taste. 1 oz. of the biscuit will make a pint of soup. Cooked vegetables, of various kinds, may be used in the soup.

It is stated that this biscuit is not liable to the attacks of weevils and other insects, to which ordinary biscuits and most descriptions of food are subject. It is entirely free from oil or grease, and therefore less liable to deterioration. The excellence of the biscuit depends upon the quantity of animal nutritious matter employed in its manufacture. The extract should therefore be reduced, by the process of evaporation, to about one-eleventh of the weight of the flesh, including its proportion of bone and fat ; this is the proportion when fat and well-conditioned beef is used. The patentee mixes about 2 parts of the extract with 3 parts of flour, equal to 5 parts : but about twenty per cent. in weight of this is lost in the baking. The



biscuit may be prepared for use in a few minutes, even in a chafing-dish, over a few coals or a spirit lamp. This invention presents another advantage,—the meat biscuit can be made in the colonies and other countries where meat is abundant and cheap; and, by reason of its concentration and portability, can be exported, at comparatively small cost, to countries where meat is dear and less abundant.—Sealed Sept. 5, 1851.—*London Chem. Gaz.*

## NOTES UPON THE DRUGS OBSERVED AT ADEN, ARABIA.

By JAMES VAUGHAN, Esq.

Member of the Royal College of Surgeons of England, Assistant Surgeon in the Bombay Army,  
Civil and Port Surgeon at Aden, Arabia.

Communicated by Daniel Hanbury.

(Continued from page 154.)

Aloes, called *Sibr* by the Arabs, and *Eliâ* by the natives of India. But very little of the best description of aloes is brought to Aden; the port of Maculla being much nearer to Socotra, nearly the whole produce of the island is carried thither, whence it is transhipped to Bombay. The price of the drug here is four rupees six annas (8s. 9d.) the *maund*. An inferior description of aloes, called here *Black Aloes*, is brought to Aden in large quantities from the interior. This sells for two rupees the *maund*, and 1600 pounds are reported to have passed the Custom-house last year (1851.)\*

SENNA.—*Cassia elongata* (Lemaire-Lisancourt) is the species of *Cassia* which grows commonly in southern Arabia and on the opposite coast of Africa. *Senna Mekki* is the name by which it is known here and in India. Of late years the trade in this drug has considerably increased, a large quantity being taken by the Americans in exchange for their cotton long-cloths, the principal material used for domestic purposes by the Arabs of the interior. Little or no senna is sent from the Somali country for exportation, though the plant is common there and grows close to the sea-beach. The Somalis seem to be ignorant of its purgative properties. Senna abounds throughout Yemn and Hadramaut; from thence it is transported to Mocha and other ports of the Red Sea

\* Three samples of Aloes accompanied this notice:

1. Aloes from Hadramaut.
2. Socotrine Aloes.
3. Aden or Black Aloes.

The last named has a fœtid, sulphurous odor.—D. H.

for exportation. Latterly, a considerable quantity has been brought into Aden from the interior. Last year, thirty tons passed through the Custom-house.\*

INDIGO, called by the Arabs and natives of India, *Neel*. A large quantity of this article, much inferior to the Indian indigo, is manufactured at Mocha and other towns in southern Arabia. It is extensively used by the Arabs in dyeing the white cotton long-cloths above mentioned, and in fact it pervades almost every part of their dress. Whether unavoidably, because they are far from being adepts in dyeing or from design, the color generally stains their half-naked bodies, and this together with the peculiar smell of Indigo, they seem to consider highly genteel, thus forming a striking contrast to the females, and especially to the Jewish women, who prefer a yellow tinge, and to that end dye their skins with a decoction of turmeric.

The indigo above-mentioned sells in the Aden market for eleven rupees the *maund* of 28 lbs. Sixteen hundredweight of this article were entered at the Custom-house last year.†

*Kdt*, the name of a drug which is brought into Aden from the interior and largely used, especially by the Arabs, as a pleasurable excitant. It is generally imported in small camel loads, consisting of a number of parcels each containing about forty slender twigs with the leaves attached, and carefully wrapped so as to prevent as much as possible exposure to the atmosphere. The leaves form the edible part, and these when chewed are said to produce great hilarity of spirits and an agreeable state of wakefulness. Some estimate may be formed of the strong predilection which the Arabs have for this drug, from the quantity used in Aden alone, which averages about 280 camel loads annually. The market price is  $1\frac{1}{4}$  rupees per parcel, and the exclusive privilege of selling it, is farmed by the government for 1500 rupees per year. Forskål found the plant growing on the mountains of Yemen, and has enumerated it as a new genus in the class Pentandria, under the name of *Catha*. He notices two species and

\* The author has transmitted two samples of Senna, marked respectively *Aden Senna* and *African Senna*. They would be known in the London market as *Inferior East Indian Senna*.—D. H.

† An excessively impure indigo, leaving after ignition no less than 94.4 per cent. of ashes. Two samples of fine indigo from another source, afforded respectively only 6.2 and 9.2 per cent.—D. H.

distinguishes them as *Catha edulis* and *Catha spinosa*. According to his account it is cultivated in the same ground as coffee, and is planted from cuttings. Besides the effects above stated, the Arabs, he tells us, believe the land where it grows to be secure from the inroads of plague, and that a twig of the *Kât* carried in the bosom, is a certain safeguard against infection. The learned botanist observes with respect to these supposed virtues: "*Gustus tamen foliorum tantam virtutem indicare non videtur.*"\*

Like coffee, *Kât*, from its acknowledged stimulating effects, has been a fertile theme for the exercise of Mahommedan casuistry, and names of renown are ranged on both sides of the question, whether the use of *Kât* does or does not contravene the injunction of the Koran: *thou shalt not drink wine nor anything intoxicating*. The succeeding notes borrowed chiefly from De Sacy's researches may be deemed worthy of insertion here.

Sheikh Abd-ool-Kâder Ansari Jezeri, a learned Mahommedan author, in his treatise on the lawfulness of the use of coffee,† quotes the following from the writings of Fakhr-ood-Deen Mekki:—"It is said that the first who introduced coffee was the illustrious saint Aboo Abdallah Mohammed Dhabhani ibn Said; but we have learned by the testimony of many persons, that the use of coffee in Yemen, its origin and first introduction into that country, are due to the learned and godly Ali Shadeli ibn Omar, one of the disciples of the holy doctor Nasr-ood-Deen, who is regarded as one of the chiefs among the order Shadbeli, and whose worth attests the high degree of spirituality to which they had attained. Previous to that time they made coffee of the vegetable substance called *Casta*, which is the same as the leaf known under the name of *Kât*, and not of *Boonn* (the coffee-berry,) nor any preparation of *Boonn*. The use of this beverage extended in course of time as far as Aden; but in the days of Mohammed Dhabhani, the vegetable substance from which it was prepared disappeared from Aden. Then it was that the Sheik advised those who had become his disciples to try the drink made from the *Boonn*, which was found to produce the same effect as the *Kât*, inducing sleep-

\* *Flora Egyptiaco-Arabica*, Hauniae, 1775. 4to., page 64.

† For an extract from this treatise, vide *Chrestomathie Arabe, ou Extraits de divers écrivains Arabes, tant en prose qu'en vers, avec une traduction Française et des notes, par M. le Baron Silvestre de Sacy. Seconde édition. Paris 1826. Tome I, p. 412.*



lessness, and that it was attended with less expense and trouble. The use of coffee has been kept up from that time to the present."

D'Herbelot states that the beverage called *Cahuat al Catiat*, or *Caftah*, was prohibited in Yemen in consequence of its effects upon the brain.\* On the other hand a synod of learned Mussalmans is said to have decreed: that as beverages of *Kât* and *Cafta*† do not impair the health or impede the observance of religious duties, but only increase hilarity and good humor, it was lawful to use them, as also the drink made from the *Boonn* or Coffee-berry.

I am not aware that *Kât* is used in Aden in any other way than for mastication. From what I have heard, however, I believe that a decoction resembling tea, is made from the leaf by the Arabs in the interior; and one who is well acquainted with our familiar beverage, assures me that the effects are not unlike those produced by strong green tea, with this advantage in favor of the *Kât*, that the excitement is always of a pleasing and agreeable kind.‡

\* *Bibliothèque Orientale*, La Haye. 1777. Tome I, page 461, article *Cahuah*.

† The Arab writer seems here to distinguish *Kât* from *Cafta*, although they are previously spoken of as synonymous. Upon this De Sacy remarks, "Peut-être le *Kât* est-il la feuille même de cet arbre, et le *Cafta* une préparation artificielle faite avec cette feuille." *Chrestomathie Arabe*, Tome I, pp. 462-3. Note 40.—D. H.

‡ Mr. Vaughan has transmitted two specimens called respectively *Subbare Kât* and *Muktaree Kât*, from the districts in which they are produced. The first named is considered of superior quality, the bundle sent which weighs nearly 2½ ounces, being worth at Aden two annas (3d. sterling.) The *Muktaree Kât* which consists of shorter shoots is not so much esteemed and consequently fetches a lower price.

*Catha edulis* Forsk. Nat. ord. *Celastraceæ*, is figured in Dr. Lindley's *Vegetable Kingdom* (Lond. 1846, 8vo.) page 586. But there is a still more complete representation of the plant under the name of *Catha Forskalii*, Richard, in a work published under the auspices of the French Government, and entitled *Voyage en Abyssinie exécuté pendant les années 1839, 1840, 1841, 1842, 1843, par une commission scientifique composée de MM. Théophile Lefebvre, Lieut., de vaisseau, A. Peit et Quartin-Dillon, docteurs-médecins, naturalistes du Muséum, Vignaud, dessinateur*. The botanical portion of this work by M. Achille Richard, is regarded either as a part of the *Voyage en Abyssinie*, or as a distinct publication under the title of *Tentamen Floræ Abyssinicæ*. The leaves of the plant as represented by this author are somewhat narrower than those of the specimens received from Arabia.

M. Richard enters into some particulars relative to the synonyms of the plant, from which it appears that Vahl referred Forskål's genus *Catha* to the Linnean genus *Celastrus*, changing the name of *Catha edulis* for that of *Celastrus edulis*. Hochstetter applied the name of *Celastrus edulis* to an Abyssinian species (*Celastrus obscurus*, Richard) which he imagined identical with Forskål's *Catha edulis*, while of the real *Catha edulis*, Forsk., he formed a new genus and species, under the name of *Trigonotheca serrata*, Hochs., Nat. ord. *Hippocrateaceæ*.



WABEI a poisonous tree which grows in the Somali country on the Habber-Gerhajjis range of the Gooleis mountains, where it attains the height of twenty feet. The poison is obtained by boiling the root in water until the decoction attain the consistency of an inspissated juice. When cool, the barb of the arrow is anointed with the juice which is regarded as a virulent poison, rendering a wound tainted with it incurable.\*—*Pharm. Journ.*, Dec., 1853.

(To be continued.)

## PROCESS FOR DETERMINING THE VALUE OF SOAP.

BY DR. BOLLEY.

To determine the value of a specimen of soap, it is necessary to ascertain,—1st, the per-centage of dry substance; 2nd, the relative proportion of fatty acid and alkali; 3rd, the kind of alkali and fatty acid, or the substance replacing the latter; 4th, the intentional or accidental admixture of foreign organic or inorganic substances.

In most instances the consumer merely determines the per-centage of water in soap, because this is the most usual and almost unavoidable admixture, and one which, as is known, may be pre-

I quote the following references from the *Tentamen Floræ Abyssinicæ*, vol. i., p. 134:—

"*Catha Forskalii*, Nob., *Catha* No. 4, Forsk., loc. cit. [*Flor. Ægypt. Arab.*, p. 63.] *Trigonotheca serrata*. Hochs., in *pl. Schimp. Abyss.*, sect. ii., No. 649. *Celastrus edulis*. Vahl., *Eccl.*, i. 21."

Although in the *Flora Ægyptiaco-Arabica* of Forskål, no specific name is applied to the *Catha* at p. 63, it is enumerated as *Catha edulis* at p. 107.

The reference to *Celastrus edulis* is not contained in the *Eclogæ Americanæ* of Vahl, but in that author's *Symbolæ Botanica* (Hauniæ, 1790, folio) pars. 1. p. 21.—D. H.

\* Some dried branches of the *Wabei*, as well as a specimen of the root, have been forwarded by Mr. Vaughan. My friend Mr. Kippist after a careful examination, has expressed the opinion that the branches in question (which unfortunately bear neither flowers nor fruit) have the general aspect of those of a plant belonging to the nat. ord. *Apocynæ*. Having searched in accordance with this suggestion, I find that *Carissa Schimper*, Alph. De C. (Prod. viii. p. 675, bears an extremely close resemblance, so far as leaves and stem are concerned, to Mr. Vaughan's plant. *Carissa Schimper* is described and figured by M. Richard in the *Tentamen Floræ Abyssinicæ*, vol. ii., p. 31., Atlas Tab. 68. It is synonymous with Hochstetter's *Strychnos Abyssinica*, with Schimper's specimens of which (*Sectio prima*: Plantæ Adoënses, No. 254) as contained in the herbarium of the British Museum and in that of my friend Mr. N. B. Ward, I find the *Wabei* very closely to agree.—D. H.

sent in a soap in considerable quantity, without in an equal degree influencing the exterior appearance, hardness, &c. The means of determining the per-centage of dry substance are,—1st, drying a weighed quantity in a water-bath; and 2nd, salting out, or introducing the soap into a saturated solution of chloride of sodium and boiling, by which means it concretes together into a solid mass tolerably free from water. With regard to the first method, many have no doubt found that when the soap has been heated for a long time in the water-bath, and has commenced to melt, it not only does not give off any more water, but becomes very hygroscopic, and attracts moisture again very rapidly.

Old Marseilles soap, exposed to a temperature of  $86^{\circ}$  F. for six hours, was found to have lost 3.2 per cent., and when kept at  $212^{\circ}$  F. for two hours, there was no further diminution in weight; after exposure to the air for a few hours, it weighed 1 per cent. more than at first. Several other specimens showed that soap, when heated to  $212^{\circ}$  F., increased in weight during the weighing. If such experiments were carried out by inexperienced persons, errors would be the natural consequence. The process of salting out may be applicable upon a somewhat large scale, with, for example, a pound of soap, and is then better adapted than the other to give trustworthy indication of the per-centage of actual soap. But the determination of dry soap has no bearing upon the very important question of the possible presence of adulterating substances, still less upon the second and third points mentioned above.

It is by no means difficult to determine the quantity of alkali and that of fat in a soap; but the operation is far more tedious and troublesome when it is at the same time requisite to ascertain whether the soap contains free alkali or fat, and the proportion of one or other to the fat and alkali in combination. Nevertheless this question may not generally be of great consequence, as both errors would scarcely be owing to a fraudulent intention, and their magnitude would be confined within a narrow limit. The uncombined alkali in hard (soda) soap may be determined by exposing the soap in fine shavings to the air, so that the alkali may absorb carbonic acid, treating it with strong alcohol, and examining the insoluble residue, which may contain other salts or insoluble substances, for alkali. A process recommended by Stockhardt is less troublesome; it consists in adding to a hot concentrated solution of soap, bitar-

trate of potash, until the fatty acids begin to separate. The larger the quantity of bitartrate requisite, the larger the quantity of free alkali. This is certainly a mere comparative test, applicable to the examination of a number of different specimens of soap. It is not improbable that unsaponified fat is sometimes present in soap. Dumas determines it by separating all the fat by means of hydrochloric acid, resaponifying with baryta-water, and extracting the baryta-soap with alcohol, which dissolves only the unsaponified fat.

The process now to be described does not take into consideration the quantity of free and combined fat or alkali, but includes the estimation of all the four above-named conditions which determine the value of a soap, and is at the same time serviceable and easily carried out.

A gramme of the soap is weighed; hard soap in shavings; soft soap is weighed to *near* a gramme, because the addition and abstraction of small quantities is more inconvenient than a reduction in the calculation. The soap is introduced into a beaker-glass holding about an ounce, treated with a small quantity of ether, in which it does not dissolve, and then with a rather smaller volume of pure acetic acid; two layers are thus formed; the soap is rapidly dissolved; the upper layer containing the ether and fat or resin, with a little acetic acid; the lower layer, water, alkali combined with acetic acid, free acetic acid, the salts usually formed in the manufacture of soap, chloride of sodium, alkaline sulphate, and finally the foreign admixtures, whether soluble in water or not. If sand, powdered pumice-stone, clay, steatite, heavy spar, &c., are present, they remain at the bottom of the glass. Other substances of organic origin, such as starch, &c., are suspended in the layer of liquid beneath the ether. The entire mass is then poured off from the undissolved substances in the beaker into a large pipette, widened in the middle and bent upwards at the lower extremity so as to form a kind of separator. The liquids are allowed to remain in the wide part of the pipette until they have perfectly separated into two layers, and it may then be so managed that none of the ethereal liquid enters its lower extremity, which is turned upwards. The beaker-glass, together with the residue, if any, is then washed with ether and water, which are poured into the pipette; and by inclining it, or blowing gently into the upper

end, the liquids may be partially separated. The addition of successive quantities of distilled water will then wash the ethereal liquid perfectly free from saline matters. This being effected, the ethereal solution of fat, together with the small quantity of water beneath it, are poured back into the empty beaker-glass, and the pipette is washed out with a mixture of strong alcohol and ether. A great advantage is thus gained, inasmuch as the small layer of water beneath the ether is rendered miscible with it by means of the alcohol; and if this is not the case at first, a few drops of alcohol must be added. It is for this reason advisable to avoid introducing too much water into the mixture when washing out the contents of the pipette into the beaker. It is also convenient to have the weight of the beaker marked upon it with a diamond. The ethereal liquid is then placed upon a water-bath, and left until nothing remains but the fat or resin, which, without altering the general principle of the process, may readily be recognized. When a trace of aqueous liquid remains beneath the fat, it is very difficult to remove it by evaporation, and the addition of alcohol to the ether is a very appropriate means of obviating this difficulty. When the smell of ether, alcohol, and acetic acid has become very feeble, the residue is weighed, and the weighing repeated after a longer-continued application of heat; it rarely happens that any decrease of weight is perceived on the second weighing, when the evaporation is carried far enough in the first instance. When several experiments are made successively with the same soap, the percentage of fat comes out in the several determinations agreeing in the second decimal place.

The fatty acid from 1 grm. of soap forms a layer of such thickness, that by slightly inclining the beaker-glass, the bulb of a small thermometer can be introduced, so as to determine the melting-point, by which means some idea may be formed of the kind of fat. If any insoluble residue remains in the beaker after the first treatment of the soap, it is dried and weighed, and its nature determined. The aqueous liquid which is separated from the ethereal solution of fat is introduced into a small capsule\*, and carefully evaporated to dryness in a water-bath. The residue is

\* A platinum or silver capsule, two inches in diameter, with a cover so that it can be used as an evaporating dish, or crucible, is the most convenient.



weighed, and ought not to suffer any further diminution of weight when again heated in the bath. The presence of gelatine may be detected during evaporation by the appearance, starch by means of iodine solution, cheese-curd by the peculiar empyreumatic odor evolved on the application of a sufficient heat; other substances may likewise be readily detected. Their total quantity is estimated by the loss of weight on ignition. If the perfect clearness of the aqueous liquid, the small residue left on evaporation, and its radiated crystalline appearance, indicate that saline substances only are present, the residue may be ignited at once and a previous weighing dispensed with. In this case the ash should contain very little carbon, and after this has been perfectly burnt off, it may be examined to determine the quantity and kind of mineral substances it contains. Silica, if it has been added in the gelatinous form, will have become insoluble, and may be separated by filtration and weighed. The filtrate must be examined for sulphate of potash and chloride of sodium, and their quantity determined when there is reason to suppose that they are greater than could be accounted for merely by the impurity of the alkali used in the manufacture of the soap, or the introduction of chloride of sodium during the process. In case it is unnecessary to determine the admixtures named, the total per-centage of alkali may be ascertained by treating the ignited residue with hydrochloric acid, evaporating to dryness, weighing, and calculating from the chloride of potassium or sodium the quantity of soda or potash. When it is necessary to ascertain whether besides soda there is potash present, or the reverse, this must be done according to the general rules of analysis, which it is not necessary to particularize here. The same remark applies to several other points. My object in the present instance is to furnish the chemist with a short method of ascertaining the value of soap, leaving the detailed execution of it to his own management.

For the usual purpose, then, this method enables us to determine the per-centage of fat\* and its melting-point, the insoluble admixtures,—sand, heavy spar, pumice-stone, &c. The loss on ignition

\* The per-centage of fat comes out somewhat higher than it really is, since the fatty acids are separated in the hydrated state, while in combination with potash and soda they are anhydrous. This circumstance is generally overlooked in the examination of soap, because the high equivalents of the fatty acids render its influence slight.

gives approximatively the organic admixtures. The saline residue, converted into chlorine compounds, indicates the per-centage of alkalies; in that from soda soaps, 58 parts are equal to 31 soda; and in potash soaps, 74 chloride of potassium are equal to 47 potash. The sum of these constituents (in centigrammes) deducted from 100 gives the per-centage of water.—*Chem. Gazette Feb. 1, 1853.*

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#### ON A NEW SOURCE OF KINO.

By ROBERT CHRISTISON, M. D., V. P. R. S. E.

Professor of Materia Medica in the University of Edinburgh.

In a letter of the 20th of last July, from a merchant of Moulmein, Mr. R. S. Begbie, son of Dr. Begbie of this city, I was informed that a species of kino—which seemed to him to present the physical properties of the commercial variety of that drug in the English home market, and which had been ascertained by a medical friend at Moulmein to possess also its medicinal virtues—might be largely obtained from a tree abounding in the adjacent provinces. Mr. Begbie added, that he believed “a small quantity had been sent some years ago to England; but as an article of export generally it has not yet been shipped.” This notice was accompanied by a small specimen, which is now produced, and which is large enough to allow of its principal properties being accurately ascertained.

As the inquiries I have made lead me to suppose that the article in question is of a very fine kind, and that the fact of its production near Moulmein, and probably over a considerable part of the neighboring province of Pegue, is not hitherto known in Europe, I beg to present to the Pharmaceutical Society the following description of it, and the reasons which induce me to think that it is obtained from the identical tree which yields in Malabar the present commercial kino of European trade.

The small portion sent by Mr. Begbie consists partly of little angular fragments; but there are several larger masses which are portions of cylinders, about half an inch in diameter, apparently moulded by collecting the juice in reeds. These have externally a grayish, striated surface, most unlike that of the broken fragments of commercial kino. They are easily frangible;

and the broken pieces have exactly the appearance of ordinary kino, except that they are even blacker, and more glassy by reflected light; and by transmitted light, though opaque when of very moderate thickness, they are of a splendid cherry-red color in very thin fragments. They are easily reduced to fine powder, which has a dark, dirty, lake tint. Their taste is very slightly bitter and intensely astringent.

Cold water acts more quickly on this kino than on the kino of commerce, gradually dissolving a very large proportion of it, and forming a deep cherry-red, astringent solution; and there is left a small proportion of greyish flocculent matter, which is slowly soluble in a great measure in boiling water, and which appears to be analogous to the insoluble variety of gum called bassorin. Boiling water dissolves this kino almost entirely, and the solution, when cold, continues nearly transparent for at least an hour; but afterwards it becomes slightly turbid, and a scanty, flocculent precipitate slowly subsides. Both the hot and cold solutions yield, when much diluted, a deep olive-green precipitate with the tincture of sesquichloride of iron; and when the solution is concentrated, a dirty grey precipitate is formed so abundantly that the whole fluid becomes a thick pulpy mass. A boiling solution in twenty-five parts of water forms with the iron test a pulp too thick to flow, which is one of the characters assigned in the Edinburgh Pharmacopœia to true officinal kino. But I find further that a solution in even seventy-five parts of cold water has a beautiful intense cherry-red color, and forms with sesquichloride of iron, in the course of an hour, a pulp so thick as to flow only sluggishly.

On comparing these characters with a fine specimen of kino of home trade, and also with a specimen collected in the neighborhood of Goomsoor, in Mysore, by Dr. Cleghorn, of the Madras Medical Service, when he was Surgeon of the surveying corps in that country, I find that the last two are identical, with the single exception that Dr. Cleghorn's specimen is somewhat redder when seen in bulk; and that the Moulmein kino is blacker, more vitreous in lustre, rather more easily soluble in cold water, and with rather less flaky residue; and when the cold solution is diluted to the strength of one in seventy-five, it requires rather more sesquichloride of iron to throw down all its tannin, and



consequently the precipitate forms with the water a somewhat firmer pulp.

This kino dissolves, with only a trace of flaky residue, in rectified spirit, which forms an intense cherry-red tincture of very pure astringent taste. The quantity in my possession is scarcely sufficient to allow of a fuller examination of its chemical properties and composition. But its physical characters, the action of water, and the properties of the watery solution, even as I have shortly indicated them, are enough to prove that the Moulmein kino is identical in nature with the present kino of home trade, and in point of quality somewhat superior. I have no doubt, from its taste, and the action of the iron test, that an analysis will prove the presence of a larger proportion of tannin.

It does not absolutely follow, even from the exact correspondences now mentioned, that the Moulmein kino is derived from the same botanical source with the present officinal kino of Europe. The officinal sort has been accurately referred by the separate researches of Dr. Gibson, Dr. Pereira, and Dr. Royle, to the *Pterocarpus Marsupium* of Roxburgh, a fine forest tree abounding in the hills of Mysore and other parts of the Indian Peninsula. But the *Butea frondosa* also yields a fine kino, which I have shown in my Dispensatory to be scarcely distinguishable in chemical properties from the officinal kind.

Mr. Begbie, however, has fortunately supplied me with a description of the Moulmein tree, sufficient to identify it with the true kino tree of Mysore. "It is," says he, "one of the commonest trees in the adjoining provinces, and is called by the Burmese *Padouk*. It grows to a great size and height. Immediately before the rainy season it is covered with long pendant yellow flowers, of an exceedingly sweet odor, like that of jessamine. The tree flowers three times, at intervals of perhaps a week or ten days; each blow lasting about twenty-four hours. The wood is in color like mahogany, and exceedingly heavy. It is used in India for making gun carriages; and at present we are preparing some for the London market, in execution of an order, I fancy, for the Royal Artillery. It makes most beautiful furniture. The gum exudes slightly without incision; but on a cut being made into the tree, it bleeds most freely." This description is not sufficiently botanical to enable me to determine



the tree from its characters in botanical works. But on submitting Mr. Begbie's letter to Dr. Gibson, Conservator of the Forests of Bombay, who very lately visited Edinburgh, that gentleman at once recognized his old acquaintance of the Indian woods, the *Pterocarpus Marsupium*; which he was one of the first to discover to be the true source of kino, by observing that, when his companions on a shooting party cut their names into the bark of a tree beside which they had been resting, a red juice freely exuded, and concreted into a dark astringent gum, like the kino of commerce.—*Pharm. Journ.*, Feb., 1853.

## CHEMICAL EXAMINATION OF THE RUBIACEÆ.

By F. ROCHLEDER.

The author has devoted himself for several years to the examination of a single family of plants. The results of these investigations have confirmed the fact already frequently stated, that the same or similar substances are very often produced in allied plants, and undergo similar transformations in their economy. He has now put together the following general results of his experiments upon some of the most interesting plants of the family *Rubiaceæ*.

1. The beans of *Coffea arabica* contain, besides some sugar, fatty matter and legumine, caffeotannic, viridic and citric acids and caffeine.

2. In the root of *Cephaelis ipecacuanha* there are ipecacuanhic and pectic acids, gum, starch, and some fatty matter and emetine.

3. In the root of *Chiococca racemosa*, caffeotannic and caincic acids and emetine (?) are met with.

4. In the bark of *Portlandia grandiflora* (*China nova Xauxa*), chinovatannic acid, chinova-red, gum, kinic and kinovic acids are contained.

5. The bark of *Cinchona scrobiculata* contains cinchonatannic acid, cinchona-red, kinic acid, kinovic acid, cinchonine, cinchotine and quinine.

6. The herb of *Asperula odorata* contains aspertannic, rubichloric and citric acids, coumarine and catechine.

7. The herb of *Rubia tinctorum* contains rubitannic, citric and rubichloric acids.

8. In the root of *Rubia tinctorum* there are present rubichloric, citric, ruberythric and pectic acids, alizarine, purpurine and sugar.

9. In the herb of *Galium verum*, galitannic, rubichloric, and citric acids are found. The two latter substances also exist, together with small quantities of tannic acid, in *Galium aparine*.

Pectic acid has only been found in the roots of two plants, the *Cephaëlis ipecacuanha* and *Rubia tinctorum*; it cannot therefore be considered as a characteristic constituent of the plants belonging to the family *Rubiaceæ*. The same is the case with coumarine, which could only be discovered in the herb of *Asperula odorata*.

The same must be said of the organic bases. Bases are contained in four plants,—in *Cephaëlis ipecacuanha* (root,) *Chiococca racemosa* (root,) *Coffea arabica* (seed) and *Cinchona scrobiculata* (bark.) In the other plants no organic bases could be detected. All the plants of this family which were examined contained an acid, the aqueous solution of which,—

a, is colored dark green by perchloride of iron;

b, becomes brown on the addition of potash, by absorbing oxygen from the air;

c. The acid contains 14 eqivs. of carbon and 8 eqivs. of hydrogen, with a quantity of oxygen varying from 6 to 10 eqivs.

d. All these acids, as far as they have been examined with this view, are decomposed by the action of acids, alkalies and oxygen, or heat, and furnish, with the loss of 2 eqivs. of carbon and 2 eqivs. of hydrogen, a product of decomposition containing 6 eqivs. of hydrogen to 12 of carbon. The oxygen in these products amounts to 5 or 6 eqivs.

These acids form a continuous series; they are here placed one below the other, proceeding from the poorest to the richest in oxygen. Some of them possess different properties with the same composition:—

Ipecacuanhic acid  $=C^{14}H^8O^6$ , in the root of *Cephaëlis ipecacuanha*.

Caffeotannic acid  $=C^{14}H^8O^7$ , in the berries of *Coffea arabica* and the root of *Chiococca racemosa*.

Chinovatannic acid  $=C^{14}H^8O^7$ , in the bark of *Portlandia grandiflora*.

Aspertannic acid  $=C^{14}H^8O^8$ , in the herb of *Asperula odorata*.

Rubitannic acid  $=C^{14}H^8O^9$ , in the herb of *Rubia tinctorum*.

Cinchonatannic acid  $=C^{14}H^8O^9$ , in the bark of *Cinchona scrobiculata*.

Galitannic acid  $=C^{14}H^8O^{10}(?)$ , in the herb of *Galium verum*.

The caffeotannic acid is resolved, at an elevated temperature, into pyrocatechine,  $C^{12}H^6O^4$ , carbon and water. By the action of the oxygen of the air in the presence of potash,  $C^{12}H^6O^5$  is found.

The chinovatannic acid is decomposed by the action of acids into sugar and chinova-red  $=C^{12}H^6O^5$ .

The aspertannic acid, by treatment with acids, gives a body of the composition  $C^{12}H^6O^6$ .

The cinchonatannic acid, by decomposition in the air, produces cinchona-red,  $C^{12}H^7O^7=C^{12}H^6O^6+HO$ .

The tannic acids of the *Galium verum*, and *aparine* and of the leaves of *Rubia tinctorum* are contained in these plants in such small quantities, that it was impossible, even by operating upon large quantities of them, to procure sufficient material for the examination of the products of their decomposition. The ipecacuanhic acid also has not yet been examined in this respect.

From what has been here stated, it follows that all the plants of the family *Rubiaceæ* that have been investigated contain a tannic acid of the general formula  $C^{14}H^8O^n$ . Taking into consideration the mode of decomposition of these substances, this formula may be

written  $\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^n$ .

All the *Rubiaceæ* belonging to the division *Stellatæ*, which were investigated, contained, together with the characteristic tannic acids, in all the parts which were examined, rubichloric and citric acids. Rubichloric acid, according to its composition, is immediately allied to these tannic acids; it contains carbon and hydrogen in the same proportion. Its formula is  $C^{14}H^8O^9$ ; it is decomposed by the action of acids at a high temperature into formic acid and chlorubine, so that its formula may be written thus:— $\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^9$ . In its properties, however, it differs completely from the tannic acids; it is not colored green by perchloride of iron, &c.

Citric acid must be considered as a characteristic constituent of

the *Stellatæ*, for the same reason that the rubichloric acid is a characteristic constituent of this group. If the hydrate of citric acid be written  $=C^{12}H^6+O^{12}$ , it represents a member of the formula  $\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^n$ .

Just as the *Stellatæ*, together with the characteristic tannic acids of the formula  $\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^n$ , contain the rubichloric and citric acids, analogous in their composition, but differing in their properties, so in the *Cinchonaceæ* the tannic acids are accompanied by kinic and kinovic acids. The kinic acid,  $C^{14}H^8O^8$ , like the rubichloric acid, is nearly allied in its composition to the tannic acid of all *Rubiaceæ*, of the formula  $C^{14}H^8O^n$ , but like it also differs from them in all its reactions. The place of the citric acid of the *Stellatæ* is occupied in this group by an acid, which, like citric acid, contains 12 atoms of carbon; its formula is  $C^{12}H^9O^3$ .

In the true *Coffeaceæ*, *Cephaëlis ipecacuanha*, *Coffea arabica* and *Chiococca racemosa*, no common characteristic substance accompanies the tannic acids. In the seeds of *Coffea arabica*, the citric acid of the *Stellatæ* is present, although in inconsiderable quantity; the kinovic acid of the *Cinchonaceæ*, combined with hydrate of carbon, is contained in the root of *Chiococca racemosa* in the form of *caincic acid*. In the root of *Cephaëlis ipecacuanha* both acids are wanting. The large quantity of starch and gum, which partake of the formula  $C^{12}H^{10}O^{10}$ , contained in this plant, is perhaps to be regarded as the representative of the citric acid. Citric acid (anhydrous) with 2 additional equivs. of water  $=C^{12}H^7O^{13}$ , is starch or gum in which 3 equivs. of hydrogen are replaced by 3 equivs. of oxygen.

If the plants of these three groups be brought together with their characteristic constituents, the following tabular view is obtained:—

RUBIACEÆ.		
I. <i>Stellatæ</i> .		
I. Characteristic constituent.	II. Characteristic constituent.	III. Characteristic constituent.
Tannic acid of the formula—	Rubichloric acid—	Citric acid—
$\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^n. n=8, 9 \text{ or } 10.$	$\left. \begin{matrix} C^{12}H^6 \\ C^2H^2 \end{matrix} \right\} O^9.$	$C^{12}H^6O^{12}.$



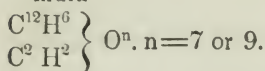
II. *Cinchonaceæ*.

I. Characteristic constituent.

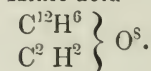
II. Characteristic constituent.

III. Characteristic constituent.

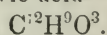
Tannic acid of the formula—



Kinic acid—



Kinovic acid—

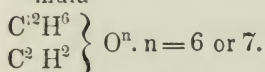
III. *Coffeaceæ*.

I. Characteristic constituent.

II. Characteristic constituent.

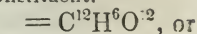
III. Characteristic constituent.

Tannic acid of the formula—

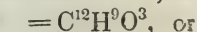


Wanting.

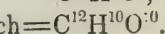
Citric acid



Kinovic acid



Gum and starch



As regards the quantity of the characteristic tannic acids existing in the different groups, the largest quantity is found in the *Coffeaceæ* and *Cinchonaceæ*, although for the most part already changed by the influences to which the parts of the plants have been exposed before they reach us. In the *Stellatæ* the quantity of these acids is very small, especially in *Galium aparine* and the leaves of *Rubia tinctorum*.

If these tannic acids be considered with regard to their amount of oxygen, it appears that this is greatest in those plants which inhabit the temperate zones, such as the *Stellatæ*, or which grow at greater elevations, like the *Cinchonæ*, which flourish on the Andes at from 4000 to 8000 feet above the level of the sea; whilst it is small in the tannic acids of plants inhabiting hot climates, such as *Cephaëlis ipecacuanha*, *Coffea arabica* and *Chiococca racemosa*. While the tannic acids of the *Stellatæ* contain 8.10 equivs. of oxygen, those of the true *Coffeaceæ* have only 6.7 equivs.; so that the deoxidation goes further in high temperatures than in colder climates.

With regard to those plants, which, together with a tannic acid, contain also an acid of the formula  $\text{C}^{14}\text{H}^8\text{O}^n$ , it appears that they only differ in their composition by 1 equiv. of oxygen, so that by the separation of 1 equiv. of oxygen, the one acid might pass into the other. Their different properties and mode of decomposition sufficiently show that they are not to be considered as different oxides of the same radical. The author here compares together the acids which are contained in the same plant.

The tannic acid in *Portlandia grandiflora*,  $C^{14}H^8O^7$ , may be formed from the kinic acid,  $C^{14}H^8O^8$ , by the loss of 1 equiv. of oxygen; as may the kinic acid,  $C^{14}H^8O^8$ , of the *Cinchona scrobiculata* from its cinchonatannic acid,  $C^{14}H^8O^9$ ; the aspertannic acid,  $C^{14}H^8O^8$ , of the *Asperula odorata* from its rubichloric acid,  $C^{14}H^8O^9$ ; and the rubichloric acid,  $C^{14}H^8O^9$ , of the *Galium verum* from its galitannic acid,  $C^{14}H^8O^{10}$ .

The rubitannic acid of the *Rubia tinctorum* may pass directly into the isomeric rubichloric acid. The occurrence of acids with 12 equivs. of carbon, such as citric and kinovic acids, together with acids of the formula  $C^{14}H^8O^n$ , as well as, on the other hand, the readiness with which the acids containing 14 equivs. of carbon pass into substances with 12 equivs. of carbon, appears to render it probable that these acids with 12 equivs. of carbon are the materials from which the acids with 14 equivs. are formed, although hitherto no one has succeeded in forming a tannic acid from citric or kinovic acid.

If the hydrate of citric acid,  $C^{12}H^6O^{12}$ , were to assimilate 1 equiv. of formic acid and give off oxygen, the formation of the tannic acids of the *Rubiaceæ* might be effected,—Citric acid =  $C^{12}H^6O^{12} + C^2H^2O^4$ , formic acid =  $C^{14}H^8O^{16}$ .

$C^{14}H^8O^{16} - O^6 = C^{14}H^8O^{10}$ , the tannic acid of *Galium verum*.  
 $C^{14}H^8O^{16} - O^7 = C^{14}H^8O^9$ , the rubichloric acid of the *Stellataæ*,  
 or the tannic acids of the cinchona bark and of the *Rubia tinctorum*.

$C^{14}H^8O^{16} - O^8 = C^{14}H^8O^8$ , the kinic acid of the *Cinchonaceæ*,  
 or the tannic acid of *Asperula*.

$C^{14}H^8O^{16} - O^9 = C^{14}H^8O^7$ , caffeotannic acid, or the tannic acid of the *Cinchona nova* bark.

$C^{14}H^8O^{16} - O^{10} = C^{14}H^8O^6$ , the tannic acid of the *Ipecacuanha* root.

In this manner the kinovic acid,  $C^{12}H^9O^3$ , might be transformed into these acids by the assimilation of oxalic acid and oxygen,  $C^{12}H^9O^3 + C^2O^3 = C^{14}H^9O^6$ . If 1 equiv. of water be separated, there remains  $C^4H^9O^5$ , which united with 1 equiv. oxygen might form ipecacuanhic acid, with two equivs., the caffeotannic acid, and so on.

That kinovic acid is capable of assimilating other compounds is shown by the investigation of caincic acid, which consists of

kinovic acid united with a hydrate of carbon, which has the constitution of acetic acid.

$C^{16}H^{13}O^7$ , cainic acid  $= C^2H^9O^3$ , kinovic acid +  $C^4H^4O^4$ .

Rubichloric acid, and its separation into chlorrybine and formic acid, is a proof that a process like that above mentioned really takes place in the plants. Citric acid  $= C^2H^6O^{12}$ , loses 7 equivs. of oxygen and passes into  $C^{12}H^6O^5$ , which, united with the elements of formic acid, produces rubichloric acid.

$C^{14}H^8O^9$ , rubichloric acid  $= C^{12}H^6O^{12}$ , citric acid  $- O^7 + C^2H^2O^4$ , formic acid.

At a low temperature the deoxidation of the citric acid appears to take place very imperfectly. The herb of *Richardsonia scabra* which was cultivated last summer by Prof. Kosteletzky in the Botanic Garden of Vienna, contained inconsiderable quantities of tannic acid, whilst not a trace appeared in the roots; both herb and root, on the other hand, were rich in citric acid salts. In its native country, the root of the *Richardsonia scabra* contains tannic acid.

The author here adds some considerations on the origin of the hydrates of carbon, and particularly on the question from what substances they are produced. The fact that plants possess the faculty of separating oxygen by the agency of the sun light, after they have absorbed carbonic acid and water, induced Liebig to suppose that the hydrates of carbon were formed from acids. The absorption of carbonic acid and water and the elimination of oxygen take place by degrees, and thus from compounds rich in oxygen, but poor in carbon and hydrogen, constituents are gradually formed, always richer in carbon and poorer in oxygen.

The author considers the result of his investigations as supporting Liebig's view, for it proves that the external resemblance in the form of the plant corresponds also constantly with the acids combined with various bases in its interior. It is also in favor of this supposition that the hydrates of carbon are really formed by the process of deoxidation in the plants, that acids occur in the same plant, which with the same amount of carbon and hydrogen are distinguished from one another by containing a larger or smaller quantity of oxygen. Although these acids cannot be regarded as different oxides of one radical, it appears to the author to be extremely probable that they may arise from the



deoxidation of one another — *Chem. Gaz.*, Aug. 2, 1852, from *Bericht der Akad. der Wissensch. zu Wien Math. Phys. Cl.*, Jan. 1852.

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## ON THE ADULTERATION OF AMERICAN LARD IN ENGLAND.

By F. GRACE CALVERT, Esq.

[In a short communication read at the meeting of the Pharmaceutical Society, Dec. 8th, 1852, Mr. George Whipple states "That he had for some time past suspected the purity of commercial lard, and had recently made a few experiments which led to the detection of large quantities of some farinaceous substance in it. This adulteration was discovered in the different varieties of lard—from the finest bladder to the common firkin lard. In an examination of the contents of two firkins weighing  $105\frac{1}{2}$  lbs., a quantity of farinaceous substance, amounting to  $22\frac{1}{2}$  lbs., was separated. The contents of another firkin, weighing  $43\frac{3}{4}$  lbs., yielded  $12\frac{3}{4}$  lbs. of a similar substance. Mr. Whipple points out the pernicious effects which this adulteration would be likely to produce in the employment of such lard for some pharmaceutical purposes, and the danger which might ensue from its application to machinery." By the following observations of Mr. Calvert, this adulteration is effected in England, and as the presence of the starchy matter is easily detected with iodine water, it will be well to have a care that the adulteration is not practiced here without detection.—ED. AM. JOURN. PHARM.]

During the numerous analyses I made some three years since of various articles of food employed in public establishments, I analysed several samples of American lard, and therefore may add to the fact already mentioned by Mr. George Whipple in your last number, that I found them to contain, in addition to starch, from 10 to 12 per cent. of water, and from 2 to 3 per cent. of alum, and about one per cent. of quick lime.

A few months ago I was able to ascertain that the operation is conducted in the following manner :

The fatty matters, such as they arrive from America, are melted with a little water in false-bottomed copper pans, through which circulates a current of steam. The dirt and other heterogeneous matters fall to the bottom of the pans, and the clear grease is allowed to run into a wooden vessel, when it is stirred in contact with cold water ; it is then put under revolving wheels, with a thick paste made of potato starch, mixed with a little



potash, alum and quick lime, which appears to facilitate the taking up of the water and starch by the fatty matter.

The cause of the American lard appearing so white, is no doubt the great division of the fatty matter through the interposition of the starch, water, and alumina.

The quantity of alum should be such that a small excess should remain to prevent the starch from becoming mildewed, and I believe that the manufacturer also adds it for the purpose of communicating to the lard the property of facilitating the raising and increasing the whiteness of the confectioners' paste, in which it is employed largely.

*Royal Institution, Manchester, January 17th, 1853.*

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#### ON RACEMIC ACID.

The doubts which hitherto have existed relative to the formation of racemic acid, have at length been completely removed by the recent researches of M. Pasteur.

It was somewhere about the year 1820, that M. Kestner of Thann, in the department of Vogdes, France, a manufacturer of tartaric acid, first noticed the existence of racemic acid; and having met with it whilst employing tartar, obtained from the grapes grown in his department, he came to the conclusion that it existed ready formed in the tartar thus obtained. Instead, however, of this acid continuing to appear as a regular product in his manufactory, M. Kestner found that after a few years it ceased to appear altogether. During the period in which racemic acid was obtained by him in the regular course of his manufacture, M. Kestner was in the habit of decomposing his crude tartars by means of carbonate of lime, using a large excess of sulphuric acid in the decomposition of the tartrate of lime, and passing a current of chlorine gas through the tartaric acid solution, for the purpose of removing its color. Subsequently, he modified his process of making tartaric acid, and was accustomed to decompose the tartar by caustic lime, using a slight excess only of sulphuric acid in the decomposition of the tartrate of lime, and omitting altogether the bleaching process.

It appears that Mr. White, of Glasgow, also a manufacturer of tartaric acid, had noticed in his manufactory a product differing

from tartaric acid, and which he took to be racemic acid. In a letter to M. Pelouze, Mr. White stated also that the tartars he had been in the habit of employing were imported from Naples, Sicily, and Oporto. M. Kestner, when informed of this circumstance by M. Pelouze, remembered that he had also used some tartars, the produce of Italy, at the time of his obtaining racemic acid. About the same time, also, it was found that large quantities of racemic acid were met with in commerce in England, although this product was quite unknown in the English manufactories of tartaric acid. On investigating the subject, it was found that this racemic acid came from some German manufacturers.

About the month of August last, M. Mitscherlich apprised M. Pasteur that M. Fikentscher, a skilful manufacturer in Saxony, prepared racemic acid, and had supplied him with some. In consequence of this information, M. Pasteur went to M. Fikentscher's manufactory, and learned from him that this acid was regularly produced in his manufactory, but that the quantity obtained had very much fallen off since his employment of tartars imported from Trieste. In fact, since M. Pasteur's visit, the quantity produced was so small as at last to be quite lost sight of altogether. In operating on Neapolitan tartars, the needle-shaped crystals of racemic acid were scarcely discernible, on account of the smallness of their quantity, amidst the large masses of tartaric acid contained in the crystallizing vessels. In addition, these small crystals of racemic acid did not make their appearance in the first crops of crystals, and but in small quantities in subsequent crystallizations; whence we see that this acid is but extremely little soluble in a concentrated solution of tartaric acid.

Knowing that M. Kestner formerly obtained racemic acid in such quantities as to be able to sell it by the hundred-weight, M. Pasteur was much surprised at the smallness of the quantity produced at M. Fikentscher's manufactory; it struck him, however, that the difference might be accounted for in the circumstance, that whilst M. Kestner employed the rough, unrefined tartars, M. Fikentscher used those which had been partially refined, and it appeared clear to M. Pasteur, that if racemic acid existed ready formed in the tartars, the principal portion of it would be remaining in the mother liquors of the refinery, whatever might be its condition in

the crude tartar. The racemate of lime itself is, indeed, but little soluble in bitartrate of potash.

Having been informed by M. Fikentscher that there were extensive refineries of tartar at Trieste and at Venice, M. Pasteur started for those places, with a view to examine the mother liquors of the refineries; but whilst stopping at Vienna to visit some manufactories of tartaric acid, the question as to the origin of racemic acid became so clear to his mind, that he at once decided on considering it as a purely natural product. In the course of his visits to several tartaric acid manufactories, in company with M. Redtenbacher, he at first thought that no appearance of racemic acid presented itself, but on examining the different qualities of tartaric acid in the stores of M. Nach, he soon recognized the small crystals of racemic acid present; the quantity, however, was so small, that it took more than three hours to collect a few decigrammes. It has previously been supposed that, as M. Nach decomposed the tartrate of potash by means of sulphate of lime, these crystals were sulphate of potash. A circumstance, however, which militated against this supposition was, that it was only within about a year that these needle-shaped crystals had made their appearance in his manufactory, and that it was only during the last two years that M. Nach had employed the crude Austrian tartars. When partially refined tartars had been used, no racemic acid showed itself. Hence M. Pasteur concluded:—

1. That the crude Austrian tartars contain racemic acid ready formed; for it is evident that, if this acid were an artificial production, it would always make its appearance in the same manufactory, the mode of operating in which was not changed, but in which the quality only of the tartars used had varied.

2. That the crude Austrian tartars should contain this acid in less quantity than the crude Neapolitan tartars, since the latter, when partially refined, still furnish some racemic acid, and that, too, when the liquors are comparatively new.

Besides, as the mother liquors remained upwards of one year before giving indications of racemic acid, this acid does not appear until it has been accumulated by successive operations, which have gradually concentrated into a small compass the acid contained in a large quantity of tartar; the mother liquors of one being used in the treatment of new crude tartar. This result was



confirmed by the fact, that, in a manufactory which had been but a few months in work, no appearance of racemic acid had manifested itself, although crude Austrian tartars were employed. Lastly, the preceding conclusions were confirmed by facts of the same kind elicited in the manufactory of M. Seybel, in which the employment of partially refined tartars had for the last two or three years been discontinued, and last winter the small crystals of racemic acid made their appearance, which were at first supposed to have arisen from some impurity in the crude tartars employed.

It must be noticed that the tartars employed in M. Seybel's manufactory were obtained from Hungary and Styria, proving that the crude tartars of those countries contained racemic acid, as well as those of Austria and Naples.

On his return to France, M. Pasteur communicated these facts to M. Kestner, and assisted him in his endeavors to reproduce the mysterious acid which for thirty years had eluded his researches. For this purpose, M. Kestner has ordered crude Neapolitan tartars, and also some of the mother liquors of the tartar refineries evaporated to dryness, which he intends operating upon as crude tartars. In addition to this, M. Kestner has introduced into his regular course of manufacture the crude tartars of Tuscany, and has already, in the third crystallization, obtained racemic acid, thus furnishing a new proof that this acid is a natural product, and that the crude tartars of Italy do contain an appreciable quantity of it.

M. Redtenbacher has since written to M. Pasteur, to the effect that M. Seybel, on converting the mother liquors of his manufactory, which had been accumulating for three years, into tartrate of lime, had decomposed a portion of that salt, and that the acid liquor obtained yielded several kilogrammes of racemic acid. The quantity of liquor undergoing crystallization was about 1,400 kilogrammes (28 cwt.) This result coincides with that obtained by M. Kestner, whilst working up the mother liquors of an old manufactory, in which the tartars of Saintonge had been employed. These mother liquors had been purchased by M. Kestner, and having noticed the presence of racemic acid, he worked them up by themselves, converting them into tartrate of lime, and proceeding in the usual way to manufacture tartaric acid. The tartrate of lime thus obtained, yielded about one per cent. of racemic acid. Hence M. Kestner concludes that the tartars of France, at least



certain parts, contain racemic acid, as well as those of Italy, Austria, and Hungary, and that this acid accumulates in the mother liquors of tartaric acid manufactories.

M. Kestner presented, through M. Biot, to the Paris Academy of Sciences, January 3, about nine pounds of the racemic acid so obtained, on which occasion the facts contained in this notice were communicated to the Academy.

In a notice of paratartaric (racemic) acid, which appeared in the *Pharmaceutical Journal*, of February, 1851, the author of the paper states, that "recent investigations, have led to the conclusion that most tartars contain a certain portion of this acid, which is lost in the process at present employed in the manufacture of tartaric acid. This fact may serve to account for the deficient results sometimes obtained."—*Ann. of Pharm.* Feb., 1853.

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#### ANALYSIS OF OILS BY MEANS OF SULPHURIC ACID.

By MAUMENE.

When fixed oils are mixed with sulphuric acid, they evolve heat. This reaction can be employed to distinguish the drying oils from those which do not possess this property.

*Olive Oil*.—Into an ordinary test glass, 50 grms. of the oil are poured; a thermometer is placed therein, and 10 cub. cent. of boiled sulphuric acid are carefully added. The temperature of the acid and oil was  $77^{\circ}$  Fahr. After being mixed, the temperature had risen to  $153^{\circ}$ . The elevation of temperature in repeated experiments is constant, that is,  $76^{\circ}$ . The mixture is made within two minutes, and the temperature has within one minute reached its maximum. It evolves no sulphuric acid.

*Rape Oil*.—Oil and acid had  $79^{\circ}$ . After being mixed, the thermometer rose to  $213^{\circ}$ . Elevation of temperature  $134^{\circ}$ . The mixture swelled, and evolved sulphurous acid. With this oil, the elevation of temperature is also constant, but the true elevation amounts to  $155^{\circ}$ . The difference of the observed and the true temperatures is caused by the loss of heat which the mixture suffers by the evolution of the sulphurous acid gas.

*Ben Oil and Tallow Oil* exhibit very nearly the same elevation of temperature as olive oil.

*Drying Oils* heat much more strongly with sulphuric acid than the non-drying ones, and can be thereby distinguished from them. Thus, when olive oil at  $77^{\circ}$  exhibits a greater elevation of temperature than  $76^{\circ}$ , it is adulterated with other oils.—*Annals of Pharm., from Comptes Rendus.*

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## ON THE COLORING MATTER OF VOLATILE OILS.

BY G. E. SACHSSE.

It is well known that most ethereal oils are colorless; however, there are a great number colored, some of which are blue, some green and some yellow. Up to the present time the question has not been decided, whether it is the necessary property of ethereal oils to have a color, or whether their color is not due to the presence of some coloring matter which can be removed. It is most probable that their color arises from the presence of a foreign substance, as the colored ethereal oils can at first, by careful distillation, be obtained colorless, whilst later the colored portion passes over. Subsequent appearances lead to the solution of the question, and are certain evidence that ethereal oils, when they are colored, owe their color to peculiar substances which, by certain conditions, may be communicated from one oil to another. When a mixture of oils of wormwood, lemons, and cloves is subjected to distillation, the previously green-colored oil of wormwood passes over, at the commencement, colorless, while, towards the end of the distillation, after the receiver has been frequently charged, the oil of cloves distils over in very dense drops of a dark green color. It therefore appears that the green coloring matter of the oil of wormwood has been transferred to the oil of cloves.—*Ibid, from Zeitschrift für Pharmacie.*

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## APPLICATION OF ELECTRICITY AND OZONE IN THE MANUFACTURE OF SULPHURIC ACID.

The *Pharmaceutical Journal*, for March, contains the specification of a patent granted to Thomas Bell, of South Shields, and enrolled December 24th, 1852. It consists, firstly, in applying currents of electricity in the sulphuric acid chambers for the purpose of promoting the union of oxygen and sulphurous acid,

and thus avoiding the necessity of using nitre; and, secondly, in obtaining and applying streams of ozone to act on sulphurous acid in the same way.

The inventor prefers to employ electricity derived from jets of steam, but does not confine himself to such. He uses an ordinary sulphuric acid chamber, and in place of, or in addition to, the use of nitre or nitric acid as heretofore, he applies electric currents. He uses for a full sized chamber, twenty-four jets of steam (of 50 lbs. pressure in the boiler,) passing through passages of about a quarter of an inch in diameter, and opposite each jet a collector consisting of numerous small points connected with an iron rod, three-quarters of an inch thick, which communicates with, and enters a glass tube, through which the sulphurous acid flows into the chamber, so that the electricity will pass into the chamber with the sulphurous acid, and convert it into sulphuric acid. The inventor finds an advantage from generating a part of the electricity from jets of steam within the chamber, but when all that is requisite is thus obtained, the resulting acid is too dilute.

The patentee does not claim to have discovered the fact that ozone is capable of converting sulphurous acid into sulphuric acid, but in arranging apparatus in such a manner that ozone and sulphurous acid may be continuously produced, and the sulphurous acid converted into sulphuric acid. He employs an ordinary sulphuric acid chamber, kept at a temperature between  $60^{\circ}$  and  $70^{\circ}$  Fahr., which is most favorable for the action of the ozone, and conducts into it a continuous current of sulphurous acid, and another of ozone, derived from the following described arrangement, viz:—

The ozone generators consist of chambers of iron or earthen ware,  $16\frac{1}{2}$  inches wide, 12 inches deep, and 26 inches high, with a tube  $4\frac{1}{2}$  inches in diameter, opening from the top into the acid chamber. Each box has two holes, about eight inches from the bottom, three-eighths of an inch in diameter, and a tray or draw arranged so as to slide into an opening near the bottom, in which is placed twelve sticks of phosphorus, seven inches long and three-eighths of an inch in diameter, immersed in water to one-half of their diameter. For a chamber 200 feet  $\times$  19  $\times$  16 feet, the patentee employs twelve such boxes, the phosphorus being replaced by fresh sticks every twelve hours, unless it inflames, in

which case the change is made earlier. The sticks of phosphorus are removed before being used a second time.

The patentee believes it will be found advantageous to pass the sulphurous acid and ozone into a column filled with coke, pumice-stone, or other suitable material, before they pass into the sulphuric acid chamber. He obtains the sulphurous acid by burning sulphur in the ordinary way.

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THE QUALITATIVE AND QUANTITATIVE DETERMINATION OF  
IODINE, AND ITS SEPARATION FROM BROMINE AND CHLO-  
RINE BY MEANS OF BENZINE AND NITRATE OF SILVER.

By E. MORIDE.

Benzine possesses the property of dissolving iodine wherever it meets with it in a free state. The color produced by this solution is bright red, which becomes deeper in proportion to the amount of iodine contained in it. When exposed to the air, the iodine is volatilized, and the solution becomes discolored.

If a few drops of nitrous acid be put into a liquid containing an alkaline iodide, and after the mixture is effected 2 or 3 grms. of benzine be added to it, and the whole strongly agitated, the benzine soon rises to the surface of the liquid, exhibiting a magnificent color, arising from the iodine which it brings with it. This reaction renders it possible to determine with the greatest ease the presence of 1 milligram, of iodine in 5 litres of water. Neither ether nor the oils of lavender, citron or turpentine, furnish under similar circumstances such decisive results.

Chloroform, employed either in M. Rabourdin's method or in that of M. Grange, certainly in many cases readily shows the presence of iodine ; but its sensibility and the color which it acquires are far from being so conclusive as the characters offered by benzine. In carefully conducted experiments, I have been able in this way to determine the presence of iodine wherever traces of it were indicated by starch-paste, and the employment of benzine has always appeared to me to furnish most satisfactory results.

I will add to these observations, that if by means of benzine we can separate extremely small quantities of iodine from water, it is also very easy to determine these quantities by nitrate of silver or metallic mercury.



Thus, after washing the iodized benzine repeatedly in distilled water, I take it up in a pipette, and introduce it into a corked tube, in which I agitate it in contact with a few drops of a solution of nitrate of silver or with a known quantity of mercury, until the liquid is completely decolorized.

In the first case, the yellow precipitate of iodide of silver is washed with alcohol of 0.86 spec. grav., thrown on a filter, and treated like chloride of silver which it is intended to weigh.

In the second, the mercury is shaken with the iodized solution, and the augmentation of its weight determined. These results may be checked by dissolving the protiodide of mercury formed in an excess of iodide of potassium.

Bromine, and bromides to which dilute nitric, nitrous or muriatic acids have been added, do not communicate any color to benzine; the same is the case with chlorine and chlorides. The bromine and chlorine remain dissolved in the water which serves to wash the benzine; they may be separated in the form of a white precipitate by nitrate of silver. Benzine, taking up iodine without possessing the property of dissolving either bromine or chlorine, enables us therefore to separate iodine perfectly from those two bodies, and to prove in a precise manner the presence of chlorides or bromides in commercial iodide of potassium.—*Chem. Gaz.*, Feb. 15, 1853, from *Comptes Rendus*, Nov. 29, 1852.

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#### ON THE PREPARATION OF GALLIC ACID FROM CHINESE GALL-NUTS.

By Dr. G. C. WITTSTEIN.

The low price of Chinese gall-nuts and the larger quantity of tannic acid which they contain, induced the author to employ them as a source of gallic acid. Having found as the result of repeated trials that of the two methods of preparation, viz., precipitating the aqueous decoction with sulphuric or hydrochloric acid, or allowing the powdered gall-nuts made into a paste with water to undergo a species of fermentation, the latter furnished a much larger product, he adopted this method, notwithstanding the length of time it requires. The first result was, however, unfavorable. At the end of six weeks he found that the mass had still a very astringent taste, the filtered liquid gave a copious precipitate with

gelatine, and no crystals were formed on evaporation. The mass was therefore boiled with water and the clear liquor precipitated by sulphuric acid, by which means the gall-nuts yielded barely one-sixth of their weight of rather colored gallic acid.

The author then refers to Strecker's researches, which have shown that tannic acid is a conjugate compound of gallic acid and sugar, and consequently that the production of the latter acid in a paste of gall-nuts and water is caused by a nitrogenous substance contained in them, which acts the part of a ferment and determines the breaking-up of the sugar into certain products, at the same time liberating the gallic acid. He is further of opinion that the non-formation of gallic acid from Chinese gall-nuts, when treated in this way, is owing to the absence of any substance capable of acting as a ferment; and there certainly does not appear to be any other reason why the tannic acid which they contain, identical\* in every respect with that of oak-galls, should not likewise yield gallic acid by this process.

If this conjecture be in accordance with fact, it would follow that the production of gallic acid from the tannic acid of Chinese gall-nuts might be effected by this process, on the addition of a small quantity of ordinary galls, perhaps also on the addition of yeast; and experiment proved that this is really the case.

A quantity of Chinese galls mixed with one-eighth of its weight of ordinary galls, both in powder, was made into a paste with water, and left exposed in an open vessel at the ordinary temperature. At the end of three weeks, during which time the water was frequently renewed as it evaporated, the mass had no longer any astringent taste, the filtered liquor gave but a slight precipi-

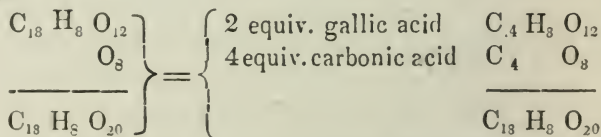
\* Hitherto the identity of the tannic acid from these two sources has been inferred only from the correspondence of their physical and chemical characters; but Wittstein has found that the elementary composition is likewise the same. The tannic acid prepared from Chinese gall-nuts by extraction with ether in the ordinary manner, and dried at 130° F., gave, on combustion with oxide of copper alone, a quantity of hydrogen, which certainly agreed closely with the formula  $C_{10}H_6O_{26}$  (=3.8 per cent.,) but the quantity of carbon was so small in proportion to that required by theory (=51.5 per cent.,) that he concluded it could not have been perfectly burnt; and on repeating the analysis, introducing some fragments of fused chlorate of potash into the posterior part of the tube, so as to obtain a supply of oxygen at the close of the operation, he obtained from 0.445 grm. of the acid, dried at 130° F., 0.164 grm. water, =0.01822 or 4.09 per cent. hydrogen, and 0.832 grm. carbonic acid, =0.2269 or 50.99 per cent. carbon.

tate with gelatine solution, and on boiling it a quantity of beautifully white gallic acid was obtained, amounting to nearly half the weight of the gall-nuts employed.

Another quantity of Chinese galls in powder was mixed with one-eighth of yeast and left exposed in the same manner. The production of gallic acid was rather slower than in the last experiment, the astringent matter not disappearing entirely until the end of four weeks and a half, but the quantity yielded was not smaller.

It follows, from these experiments, that the present theoretical view of the production of gallic acid from tannic acid is incorrect. Wittstein considers that the absence of any sweet taste in the digested mass is a sufficient proof that the sugar has been decomposed—the question is, in what manner?

Pelouze regards the change as a partial oxidation, assuming that tannic acid takes up eight equivalents of oxygen from the atmosphere, which, combining with four equiv. of carbon, escape and leave two equiv. of gallic acid. Adopting the old formula for tannic acid,  $C_{18} H_8 O_{12}$ , this may be represented by the following equation:



An evolution of carbonic acid certainly takes place, but Wittstein shows that it is in no way connected with the influence of atmospheric oxygen, for the production of gallic acid takes place when a paste of gall-nuts is allowed to remain a sufficient time in a flask with a bent tube dipping under water. He further states that he has obtained alcohol in this way, thus proving that the change consists in a vinous fermentation of the sugar existing in tannic acid, and that it is from this source the carbonic acid originates. Bracconnot long since observed, that powdered gall-nuts, moistened with water, suffered vinous fermentation; but this statement has not hitherto received the attention it deserved, because gall-nuts were found to contain no (free) sugar.

The author further expresses his opinion, that the absence of the necessary ferment, in sufficient quantity, is the only reason why an aqueous decoction of gall-nuts yield less gallic acid, and more

slowly, than when the gall-nuts are made into a paste with water, the ferment being probably insoluble.—*Pharm. Journ.*, March, 1853, from *Vierteljahresschrift für praktische Pharmacie*, Heft. i. 1853.

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## ON THE DETERMINATION OF WATER IN COMMERCIAL IODINE.

By M. BOLLEY.

Powdered iodine takes up a tolerably large quantity of water without experiencing any remarkable alteration in appearance. The quantity of water thus mechanically mixed with iodine may, according to some authorities, amount to as much as 10 or 12 per cent., and the methods for determining it are very insufficient. Although less volatile than water, this substance, like many others, is very readily carried off by the vapor of water. Chevallier recommends that the quantity of water should be determined by pressing a known weight of the iodine between folds of bibulous paper, and then weighing it again. It is evident that this method cannot furnish accurate results. Another method consists in rubbing the iodine with twice its weight of fused chloride of calcium, and heating the mixture to 356° F. in a tubulated retort, by which means the iodine is volatilized, while the water is retained by the chloride of calcium. In this case care must be taken that water is not evaporated from the chloride, and there is considerable trouble in thoroughly removing the iodine from the neck of the retort.

Bolley proposes the following method as being both simple and accurate. About 30 grs. of iodine are introduced into a small porcelain dish previously weighed, about 240 grms. of mercury added, and the whole weighed together with a small agate pestle. The dish is then laid upon a sheet of white paper, and the iodine and mercury rubbed together by means of the agate pestle until the smell of iodine has disappeared and the mass has assumed a reddish-brown color.\* When complete combination has been effected,

\* It suddenly becomes pasty, and closely resembles an amalgam, a fact which does not appear to have been noticed. To effect this, a quantity of mercury six or eight times as great as that of iodine appears necessary. The uncombined mercury may be pressed out from the iodine, which does not destroy the continuity of the former.



the dish is placed in a water-bath, and after some time weighed. The loss of weight gives the quantity of water in the iodine. There is a slight loss of water in this operation, in consequence of the heat developed during the combination of the iodine and mercury, but the quantity of iodine volatilized is very minute. It is advisable to lay a piece of starch-paper over the dish while in the water-bath, so as to be sure that no iodine has been lost in consequence of imperfect combination. The following results of the examination of three kinds of iodine will give some idea of the applicability of the process; two determinations were made in each case immediately after each other:—

Iodine A. I.	3.79 p. c.	B. I.	4.05 p. c.	C. I.	6.31 p. c.
	II. 3.61 p. c.	II.	3.88 p. c.	II.	6.18 p. c.

—*Chem. Gazette*, March, 1853, from *Schweizerisches Gewerbeblatt*, Sept. 1852.

#### ON THE FABRICATION OF OIL OF ROSES IN THE BALKAN.

It is principally the Christian inhabitants of the low countries of the Balkan between Selimno and Carloya as far as Philippopolis, who occupy themselves with the culture of the *Rosa centifolia provincialis*. In good seasons about 400,000 meticals (1 metical =  $1\frac{1}{2}$  drachm) are obtained in this tract of country. 400 roses form about 1 oka, 8 okas furnish about 1 metical of oil. In bad seasons only from 100,000 to 200,000 meticals of oil are obtained. The process followed, contrary to so many statements, is simply a distillation of the roses with water; this is performed in copper retorts, which contain about 30 okas of water and the same quantity of roses. The oil obtained varies in its properties; many Kasas? furnish an oil which solidifies more readily than others. The former is more sought after in commerce, but the more fluid oil has the finer odor. The oil is put into copper vessels, called "kunkunnas," which contain 100—1000 meticals; these, when filled, are soldered up. The rose-water which is obtained at the same time serves as a cosmetic, &c. The transit of the oil of roses is from Kasanlik through Constantinople.—*Chem. Gazette*, March, 1853, from *Dingler's Polyt. Journ.*

## ON THE ESTIMATION OF IODINE.

BY DR. FREDERICK PENNY,

Professor of Chemistry, Andersonian University, Glasgow.

Among the many applications that may be made of bichromate of potash to the purposes of centigrade analysis, there is none more convenient or useful than its employment for the estimation of the amount of iodine in samples of commercial iodine and of iodide of potassium. In Glasgow especially, which is the principal focus of the manufacture of salts of potash, and of iodine from kelp, and where the problems referred to are frequently presented for solution, an expeditious and exact method for the determination of iodine becomes truly valuable.

According to the statements of a party well qualified to judge, it appears, that in the kelp season of 1851, the total quantity of kelp brought to Glasgow was about 6000 tons ( $22\frac{1}{2}$  cwt. to the ton,) which may be considered a fair average of ordinary seasons. On account of the greatly increased demand for potash-salts, the arrivals in 1850 amounted to nearly 10,000 tons, which is considerably higher than for several previous years.\* The manufacture, however, is not confined to Glasgow; there are iodine works at Borrowstowness, Greenock and Falkirk, in Scotland, at Ramelton in Ireland, and at Cherbourg and Brest in France.

The centigrade process, here to be described, for the estimation of iodine, is based upon the fact, that chromic acid in presence of hydrochloric acid causes the complete decomposition of soluble metallic iodides, the chloride of chromium and the chloride of the other metal being produced, while the iodine is thrown down in the solid state. Bichromate of potash is taken as the most convenient and stable form of chromic acid. The

\* *Kelp Imports in Glasgow. July to July.*

1841-42	.	.	.	.	2565 tons.
1842-43	.	.	.	.	1887 "
1843-44	.	.	.	.	1965 "
1844-45	.	.	.	.	3263 "
1845-46	.	.	.	.	6086 "
1846-47	.	.	.	.	3627 "

Mr. Glassford's *Kelp Manufacture.*

reaction with iodide of potassium is exhibited in the following equation :



The action is immediate, and provided that the solutions are kept cool, no secondary result is formed. The precipitated iodine speedily subsides, leaving the supernatant liquid quite clear, though slightly colored, with a few floating particles of iodine on the surface. When the solution of the bichromate is overdosed with the iodide, it becomes dark red, from a portion of the iodine being dissolved by the excess of the iodide. This change of color is useful as indicating when the addition of the iodide has been carried too far.\*

#### ON THE ESTIMATION OF THE STRENGTH OF FRENCH ESSENCES.

BY MR. THOMAS JACKSON.

Wishing to estimate the comparative value of two samples of "*Extrait triple au Jasmin*" in a more positive and satisfactory manner than that founded on their specific gravities, or their odors, and having searched in vain through the works at my command for some acknowledged mode of operating, I took into consideration the possibility of isolating the essential principles present, modified by heat or by combination.

A preliminary experiment, performed with one drachm of essence added to two ounces of a strong solution of chloride of sodium slightly acidulated, exhibited on the surface of the liquid a film of essential oil, reddened by the free acid, after a night's repose. With the view of obtaining a similar but more complete result, I substituted chloride of calcium for common salt. Commercial chloride of calcium was dissolved in rectified spirit, and the solution filtered and evaporated to dryness. To half-an-ounce of essence, contained in a graduated tube, the dry chloride of calcium was added to saturation, then two drachms of water, or as much as was required to render the mixture sufficiently fluid for the essential oil to separate. The solution, previously to the addition of the water, was clear, but when the water was added it

\* Those who may desire the details of this paper, are referred to the Chemical Gazette, vol. x. p. 392, from whence it is taken.—ED. AM. JOUR. PHARM.

became cloudy, and evidence of the separation of oil was soon manifested.

Under these circumstances the oil rises to the surface, and is found there in a flocculent mass after the mixture has stood for a few hours, or during a night; and the measure of the oils thus separated afford a fair index of the relative strength of the essences examined.

In order to get the oils in a more definite state, the mixture in which the separation had been effected was twice washed with an equal volume of ether, and the latter, after being decanted, was allowed to evaporate spontaneously. The sides of the evaporating dish were coated with a concrete oil of a light orange color, and at the bottom of the dish was a small quantity of fluid, which, on being dried over sulphuric acid, afforded crystals of chloride of calcium. By washing the contents of the dish with ether, which had been previously dried with chloride of calcium, and again evaporating the solution spontaneously, the essential oil was obtained free. It is a concrete oil, having a powerful and characteristic odor, and of a pale color. On the addition of oil of vitriol, it acquires a deep blood red color and a pungent odor.

The mother liquor, containing the chloride of calcium, from which the oil had been separated, on being afterwards evaporated afforded a very faint smell.

Two samples of essence examined in the manner described, gave, in round numbers, one grain and three grains respectively of essential oil from half-an-ounce of the essence.—*Pharm. Journ.*, Feb., 1853.

*Manchester, Jan. 11th, 1853.*

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## ON THE ALUM SPRINGS OF VIRGINIA.

By DR. THOMAS POLLARD, of Richmond.

[We extract the following from an article in the Richmond, Virginia, Stethoscope for March, by Dr. Pollard, on the Alum Springs of Rockbridge and Bath counties of that State.]

*The Rockbridge Alum Springs* are situated 17 miles west of Lexington, and have rapidly grown in reputation and public favor. The springs issue from the base of a hill 100 feet in elevation, and are five in number. They flow from the rock and are supplied by the percolation of the rain water through strata of clay slate, which is the source of their mineral constituents. The springs



vary in the proportion of solid constituents, and the same spring is not uniform in composition, being affected by rains. The following analysis of spring No. 2 was made by Dr. Hayes of Boston, the quantity examined being one gallon :

Sulphate of potash	-	-	1.765	grs.
Sulphate of lime	-	-	3.263	"
Sulphate of magnesia	-	-	1.763	"
Protoxide of iron	-	-	4.863	"
Alumina	-	-	17.905	"
Crenate of ammonia	-	-	0.700	"
Chloride of sodium	-	-	1.003	"
Silicic acid	-	-	2.840	"
Free sulphuric acid	-	-	15.224	"
Free carbonic acid.	-	-	7.536	"
				<hr/>
				56.867
Pure water	-	-	58315.123	"
				<hr/>
				58372.000

The diseases in which this water has most reputation are dyspepsia, scrofula, chronic diarrhœa and skin diseases.

*The Bath Alum Springs* are located about 17 miles west of the Rockbridge Springs, in Bath County. The springs are six in number, and issue at the base of a hill only 15 or 20 feet high, of slate formation. The following is Dr. Hayes' analysis of spring No. 3, viz :

Free sulphuric acid	-	-	7.878	grs.
Carbonic acid	-	-	3.846	"
Sulphate of potash	-	-	0.258	"
Magnesia	-	-	1.282	"
Lime	-	-	2.539	"
Protoxide of iron	-	-	21.776	"
Alumina	-	-	12.293	"
Crenate of ammonia	-	-	1.776	"
Silicate of soda	-	-	3.150	"
				<hr/>
				54.798
Pure water	-	-	58317.202	"
				<hr/>
				58372.000

This water is used for like purposes with the preceding, but is more chalybeate. The details of the therapeutic properties and application of these waters will be found in the *Stethoscope* for March, 1853, page 148-154.

## Varities.

*Sketch of the Opium Trade, as carried on between India and China.* By NATHAN ALLEN, M. D., Lowell, Massachusetts.—Opium, as is well known, is the production of the plant *Papaver somniferum*, called in English the Poppy. This plant was originally a native of Persia, but is now found growing as an ornamental plant in gardens throughout the civilized world. It is most extensively cultivated in India, where it is estimated that more than 100,000 acres of the rich plains of that country are occupied for this purpose, giving employment to many thousands of men, women, and children. Its cultivation throughout is very simple. The seed is sown in November, and the juice is collected during a period of about six weeks in February and March. The falling of the flowers from the plant is the signal for making incisions, which is done in the cool of the evening, with hooked knives, in a circular manner, around the capsules. From these incisions a white milky juice exudes, which is conereted into a dark brown mass by the heat of the next day's sun; and this being scraped off every evening as the plant begins to exude, it constitutes opium in its crude state. India, it is said, produces sixty thousand chests of opium annually, each chest varying in weight from 125 to 140 pounds.

Two of the principal localities for the cultivation of this drug in Bengal are subject to the East India Company, and the manufacture and traffic in it is a strict monopoly of the government. In the others there is a most oppressive system of espionage established over the natives, to an extent which throws the control of the traffic into the hands of the same company. On that which was raised in Malwa, a province lying in the western part of India, beyond the East India Company's control, and which, in order to reach Bombay, the principal market, has to pass through certain territories of the Company, a *transit duty* of 400 rupees is levied. The income from this tax in 1846 was £1,000,000, which, with the revenue received the same year at Calcutta, from the article, makes the sum total of income to the Company from it £3,000,000.

The idea of sending opium from Bengal to China originated in 1767. From this time to 1794 the trade in it met with but poor success. In the latter year the English succeeded in stationing one of their ships laden

with opium at Whampoa, where for more than a year she lay unmolested, selling out her cargo. In 1821, owing to the difficulties attending the sale at these places, the opium merchants withdrew all their vessels from Whampoa and Macao, and stationed them under shelter of Lintin Island, in the bay, at the entrance of Canton river, which henceforth became the seat of extensive trade. From these vessels it was taken in Chinese junks and smugglers' boats, and retailed at various ports along the shore. In 1847, it is said about fifty vessels were engaged exclusively in this trade, besides a greater or less number which were only partially freighted with the drug.

It is stated that two and a half millions dollars worth of opium is annually imported into Foo-chow, from whence it finds its way into the interior. In that city alone there were, in 1848, one hundred houses devoted to the smoking of the drug, while as many retailed the poison in small quantities.

As respects the progress and present extent of the trade, it is said that from 1794 to 1820 the amount exported to China varied from 3,000 to 7,000 chests per year. In 1827 it amounted to between 39,000 and 40,000 chests, valued at \$25,000,000. From 1838 to 1842 the trade was almost entirely interrupted by the war which grew out of the attempts on the part of the Chinese government to suppress it. At the conclusion of the war, the trade was resumed with renewed vigor. For the year 1848, the amount imported into China from Bombay was 19,111 chests, and from Calcutta 36,000 chests, which, at an average of \$550 per chest, would amount to \$32,000,000 expended for this single article of trade. Then the Chinese pay an advance on this sum of several millions more, which goes into the hands of the merchants as the fruit of their investment and labors in the trade.

The principal use made of opium by the Chinese is in the form of smoking, a practice to which they become most passionately addicted. The wealthier orders do their smoking in their own dwellings, but for the poorer classes there are thousands of shops fitted, in many of the Chinese cities, with accommodations expressly for smoking. Many of these shops are represented to be the most miserable and wretched places imaginable. Rev. Mr. Squire of the Church Missionary Society, says of them—"Never, perhaps, was there a nearer approach to hell upon earth than within the precincts of these vile hovels, where gambling is likewise carried on to a great extent." It is stated that there are one thousand of these opium shops in the city of Amoy. All classes in the community are addicted to the practice.

The effects of this drug upon the consumer are thus described by a distinguished Chinese scholar: "It exhausts the animal spirits, impedes the regular performance of business, wastes the flesh and blood, dissipates every kind of property, renders the person ill-favored, promotes obscenity, discloses secrets, violates the laws, attacks the vitals and destroys life." This statement is confirmed by other natives, and also by foreign residents;

and it is asserted that, as a general rule, a person does not live more than ten years after becoming addicted to the use of this drug.

The Chinese government have made strong efforts to cut off or restrict the traffic in this drug. Public attention was directed to its injurious effects in 1799, and in 1809 an edict was issued requiring all ships discharging their cargoes at Whampoa, to give bonds that they had no opium on board. Still more stringent laws were adopted in 1820. In 1834 an edict was issued, declaring that the injury done by the influx of opium, and by the increase of those who inhaled it, was nearly equal to a *general conflagration*, and denouncing upon the seller and smoker of the poison the bastinado, the wooden-collar imprisonment, banishment, confiscation of property, and even death by public decapitation or strangulation. But notwithstanding all this, the trade kept increasing, until at length an Imperial Commissioner was appointed, clothed with the highest authority, to proceed to Canton and endeavor to effect an utter annihilation of the trade. In carrying out this determination, he seized and destroyed some 20,280 chests of opium, and compelled the merchants to sign a bond that they would forever cease trading in the article.

This bold and decided measure on the part of the Commissioner led to the war with England, which is commonly known as the opium war, the result of which is well known to all our readers. The Chinese were defeated, and subjected to terms which reflected anything but honor upon their conquerors; one of which was the forcing of this traffic upon the Chinese—a traffic which they had always considered contraband and illegal, and had striven by every means in their power to annihilate and protect their people from. When urged to legalize the trade, the Emperor replied in these memorable words—"It is true," said he, "I cannot prevent the introduction of the flowing poison; gain-seeking and corrupt men will, for profit and sensuality, defeat my wishes; *but nothing will induce me to derive a revenue from the vice and misery of my people.*"

One result of the war was the ceding of the island of Hong Kong to the English. In this island, after passing into the hands of the victors, the trade in opium was legalized, and twenty shops for its sale immediately licensed, within gun shot of the Chinese Empire, where such an offence is punishable with death. Thus the war, instead of putting an end or check to the system, through the cupidity of the English, resulted in affording greater facilities than ever for its prosecution. The Chinese dare not impose the penalties affixed to a violation of their laws restricting the trade, which have never been abrogated or repealed, for fear that if they should do so it might be made the groundwork for another war, which would result in their being despoiled of still larger portions of their territory and possessions.

It is stated upon the highest authority, that the British government in India could not be sustained without the immense revenues derived from this trade. This revenue for the last six years, it is said, has amounted to nearly \$80,000,000. It is also estimated that the immense sum of \$400,000,000 of



specie has been drained from China to pay for this article alone, within the last half century. That this pernicious contraband traffic is upheld mainly by the British government, through its agent, the East India Company, all are aware; and the stain which its conduct towards the Chinese, in forcing this "flowing poison" upon them, is held up to the detestation of the civilized world. Money, not morality, has been its governing principle; and to increase its own resources and power, it has legalized and upheld this traffic, which is destroying, morally, socially, and politically, the whole Chinese nation; and which threatens to blot it out from among the nations of the earth. Well might we inquire, what must be the verdict of future generations, as they peruse the history of these wrongs and outrages? Will not the page of history which now records £20,000,000 as consecrated on the altar of humanity to emancipate 800,000 slaves, lose all its splendor and become positively odious, when it shall be known that this very money was obtained from the proceeds of a contraband traffic on the shores of a weak and defenceless heathen empire, at the sacrifice, too, of millions upon millions of lives?—*New York Med. Gaz.*

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*Mixtures or other Medicinal Preparations, containing Gum-resins*—The gum-resins, such as myrrh, ammoniacum, assafoetida and others, may be successfully suspended in mixtures and other preparations by means of the following easy and simple process. On adding six or eight drops of pure sweet almond oil to a very small quantity of the gum-resin employed, it forms into a mass by trituration in a mortar; and when the oil and gum-resin have become thoroughly incorporated together, the result is a smooth paste, to which the vehicle, in which it is intended the gum-resin shall be administered, is to be added very gradually. By this means an emulsion is prepared in a very speedy manner. This method of preparing emulsions with the gum-resins admits of the mixture being heated, if necessary, without causing the least coagulation; whereas emulsions prepared by means of the yolk of egg will not allow of the application of heat, without more or less coagulating; an advantage of which both the pharmacist and the physician will on all occasions gladly avail themselves.—*Annals of Pharmacy and Practical Chemistry.*

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*Some remarks on Potash or Soft Soap.* By DR. G. C. WITTSTEIN.—It is well known that soda soap will not dissolve in a solution of alkaline salts, and that the attempted separation of potash soap from its solution, by means of common salt or sulphate of soda, produces a soda soap by double decomposition; and therefore it is impossible, by the methods employed in the manufacture of soda soap, to make potash soap\*.

From the great analogy which exists between soda and potash compounds, it would be expected that potash soap would be separated from its solutions

\* For these reasons nearly all the potash soap sold at chemists, as being the article ordered by the London Pharmacopœia, is imperfectly prepared, containing soda, glycerine, &c.—*Editors of the "Annals."*

by potash salts. However, this is not the case, as when to a solution of potash soap, which has been obtained by boiling fats with a solution of caustic potash, a considerable quantity of chloride of potassium has been added, the separation of the soap does not follow; the salt dissolves in the soap, and the solution remains clear.

From this result it is evident that it is impossible, as in the ordinary process of making soda soap, to separate potash soap as such, by the aid of salts. The only way, therefore, to prepare potash soap from fats and caustic potash is to evaporate its solution to dryness, by which a sort of extract-like substance is obtained, containing glycerine and other impurities.

When a pure potash soap is required, it can only be made by the direct union of the oily acids with caustic potash, and not by the saponification of oils.\*—*Annals of Pharmacy, Sept. 1852.*

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*Notice of the "Ice Spring" in the Rocky Mountains, (from a letter of GEO. GIBBS, Esq.)*—The Ice Spring, so called, is considered by the mountaineers as one of the curiosities of the great trail from the States to Oregon and California. It is situated in a low marshy "swale" to the right of Sweet water river, and about forty miles from the South Pass. The ground is filled with springs, and about eighteen inches beneath the turf lies a smooth and horizontal sheet of ice, which remains the year round, protected by the soil and grass above it. At the time of our passing, July 12th, 1849, it was from two to four inches thick, but our guide told us that he had seen it a foot deep. It is perfectly clear, and beautifully disposed in hexagonal prisms, separating readily at the natural joints. The ice has a slightly saline taste, the ground about it, as with the Sweetwater and Platte river country generally, being impregnated with salts, and the water at one spot near by tasted of sulphur. Not the least singular circumstance was the smoothness of the upper surface of the stratum, although formed beneath soil.—*Silliman's Journal.*

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*Saccharated Medicinal Powders.*—Some of the most useful of our pharmaceutical preparations are those known as tinctures, which hold in solution many of the most active principles of vegetable substances. Yet as alcohol, either pure or more or less diluted with water, constitutes the greater part of their composition, the frequent administration of this substance is,

\*Dr. Wittstein is in error here, as a pure potash soap can be separated from its solutions and from glycerine, when made in the ordinary way, by a concentrated solution of caustic potash, in which it is insoluble. The best method to make the potash or soft soap of the London Pharmacopœia is to boil olive oil with a sufficient quantity of a solution of caustic potash until it is saponified; then to concentrate the solution by heat in a water-bath, and afterwards to add a strong solution of caustic potash to it, when the potash soap will float on the surface, if the solution be sufficiently strong, and may be removed. By placing the soap in a funnel, the excess of caustic alkali and glycerine will drain from it. By this method an excellent soap, of a clear, gelatinous appearance, is obtained.—*Editors of the "Annals."*

occasionally, very much open to serious objections, both on the part of the physician and his patients. For this reason Dr. Becker recommends the employment of saccharated medicinal powders as substitutes for tinctures, whenever the latter may be considered objectionable. He directs equal proportions of the tinctures of hellebore, cinchona, hyoscyamus, or of other vegetables, as the case may be, and sugar, to be well mixed together, and then evaporated so as to drive off the alcohol, and then to administer the residue instead of the tincture. To this residue he gives the name of *helleborus saccharatus*, *hyoscyamus saccharatus*, *cinchona saccharata*, &c. &c., according to the drug made use of.

This mode of preparation of medical substances has evidently attracted the attention of some of the medical authorities of our own country, for in reference to this subject the editor of one of the medical journals makes the following practical observation: "Supposing the unimpaired medical properties of the tinctures can be thus fixed in these powders (which is problematical), this mode of administration would prove a great boon to physician and patient. Not only is alcohol obviously mischievous in many cases wherein the active principles, of which it is the vehicle, are indicated; but in others in which such contra-indication is not so apparent, it has often proved a means of inducing a habit of dram drinking, which prevails even among respectable females to a far greater extent than is usually supposed.—*Annals of Pharmacy*.

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*Butyric Alcohol*.—Among the chemical facts brought forward at the Academy the past month, we notice the discovery of butyric alcohol by M. Adolph Wurtz. This alcohol,  $(C_3 H_7) O, HIO$ , which has been detected by M. Wurtz in the caput mortuum of the oil of potatoes, so much studied by chemists, furnishes a new verification of the beautiful theory of alcohols of Dumas, in which several lacunes have been recently filled by the cerotine and melissine of Mr. Brodie, and by the caprylic alcohol which M. Bouis has derived from castor oil.—*Silliman's Journal*.

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*On Pagliari's Hæmostatic*. By M. SEDILLOTT.—M. Pagliari, a pharmacien at Rome, professes to have discovered a styptic liquor of great power; and several of the officers of the French army have testified to its efficacy. M. Sedillot has also, on several occasions, brought forward cases in corroboration; and in the present paper he adduces additional ones, in some of which considerable vessels, although not those of the first class, furnished the blood. He says that it has been objected, that compression is employed by means of bandages and charpie; but this is merely to prevent the coagula which form being removed from the mouths of the vessel; and it has only to be continued for twenty-four or forty-eight hours. So little plastic is human blood, that compression alone, unaided by styptics, would have to be so prolonged and forcible, that it would risk the formation of ulcers or gangrene in the parts to which it was applied.



M. Pagliari has now revealed the composition which is as follows: Eight ounces of tincture of benzoin, one pound of alum, and ten pounds of water are boiled together for six hours in a glazed earthen vessel, the vaporised water being constantly replaced by hot water, so as not to interrupt the ebullition, and the resinous mass kept stirred round. The fluid is then filtered, and kept in stoppered bottles. It is limpid, slightly styptic in taste, aromatic in odor, and the color of champagne. M. Hepp, of Strasburg, has substituted white resin for the benzoin. Every drop of this fluid poured into a glass containing human blood, produces an instantaneous magma; and by increasing the proportion of the styptic to the quantity of the blood, a dense, homogeneous, blackish mass results.

Many are the circumstances in which the surgeon may not be able to have recourse to the ligature, as in the case of friable arteries, secondary hæmorrhage from deep-seated, painful, or inflamed wounds, the impossibility of seizing the artery, or where the hæmorrhage results from numerous arterioles, which are too small or retracted, or from veins and capillary vessels. In all cases, in fact, where compression is now usually employed, without much benefit being expected to result from it, and often, indeed, proving useless or dangerous, this fluid seems indicated.—*Brit. Med. and Chir. Review*, Oct. 1852, from *Bull. de Ther.*, tom. xlii. p. 491—502.

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*On Matico in Diarrhœa.* By M. MODONI.—M. Modoni states that he has employed this substance in about 120 cases, and usually with good and speedy effect, in various species of intestinal discharges, and especially in atonic diarrhœa. It is given at the Bologna Hospital in doses of from 18 grs. to ʒj. per diem, no inconvenience, save a little nausea or diarrhœa, ever being caused, and this being capable of removal, either by diminishing the dose or temporarily suspending the remedy. In the most favorable cases, an impression is made upon the disease by three or four doses; and it is quite relieved in from three to six days. The medicine should, however, be continued awhile longer in order to prevent relapse. In those diarrhœas which, owing to the existence of visceral changes, or in the presence of a general dyscrasis, the return of the diarrhœa is inevitable, the matico is still an invaluable remedy, owing to the rapidity of its astringent action, which enables us to suspend the exhausting discharges, and obtain time for the employment of any other means which the nature of the case may indicate.—*Brit. and For. Med. Chir. Review*, July 1852, from *Bulletino delle Scienze Med.*, vol. xx. p. 63.

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*On the Mode of Administration of Iodine.* By M. DEVERGIE.—M. Devergie administers the substance as an "antilymphatic," in the following manner: Porphyrized unoxidized iron filings, 40 centigrammes; iodine, 1 gramme, 65 to 80 centig.; water 8 grammes; simple syrup 500 grammes. The iron and iodine are triturated in a mortar, the water being added drop



by drop, and then incorporated with the syrup. When it is desired to add the iodide of potassium, 6 or 8 grammes are previously dissolved in the smallest possible quantity of water, and incorporated with the iron and iodine before the syrup is added. A tablespoonful of this syrup is given in a bitter tisane, (that of hops, prepared according to the Paris Codex, being the best,) night and morning.—*Ibid*, from *Gaz. des Hôpitaux*, No. 22.

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*On the Medicinal Uses of Urate of Ammonia.* By Dr. BAUER.—Five years' observation has convinced Dr. Bauer that this is a most valuable medicine in chronic cutaneous diseases and in tubercular diseases of the lung. An ointment containing one scruple to the ounce, is applied by a pencil to the eruption night and morning, the cure being effected in from one to three weeks. In tubercular disease the ointment is rubbed in alternately night and morning on the back and front of the chest. No inflammatory complication should be present during its employment.

In reference to this substance it is interesting to observe, that in Colombia, South America, where lepra prevails so extensively, the benefit derived from the internal and external use of *guano* has been placed beyond all doubt; and Dr. Lallemand has found it of great utility in the treatment of morphae in the Brazils. The urate of ammonia, which is found in this substance in great abundance, is probably the chief medicinal agent.—*Ibid*, from *Buchner's Repert.*, No. 19, p. 86.

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*On the Deprivation of the Noxious Power of Poisonous Mushrooms.*—By M. GERARD.—M. Gerard has recently exhibited before a committee of the Paris Council of Health, the complete innocuousness of the most poisonous species of mushroom, after being subjected to a very simple mode of preparation. The experiment was exhibited in his own person, after both he and all the members of his family had made similar trials with the like result. Two of the most poisonous forms were chosen: *amanita muscaria* and *venenosa*, of Pearson; and the trial was pronounced quite satisfactory. The preparation, principally consisting in suitable maceration, has, indeed, been long practiced to some extent by the country people. The researches of Letellier have also shown that the principle which he calls *amaniline*, is very deliquescent, and is remarkably and almost exclusively soluble in water. Alcohol only takes it up by reason of the small quantity of water which it contains; and when *amaniline* renders sulphuric ether yellow, this is owing to imperfect rectification. M. Gerard directs that to every 500 grammes of mushrooms cut up into a medium size, a litre of water, slightly acidulated by two or three spoonfuls of vinegar (or, if nothing else is at hand, gray salt,) should be added. If the water alone can be obtained, this must be renewed once or twice. In this fluid the fungi are to be macerated for two entire hours, after which they are to be washed in abundance of water. Next they are to

be put into cold water and boiled for half an hour, after which they may be taken out, washed, dried, and used as food.—*Ibid*, from *L'Union Medicale*, 1851, No. 148.

[M. Apoiger has recently shown (*Repertorium für die Pharmacie*,) that the poisonous principle of the toadstool may be separated by acetate of lead. By washing the precipitate and decomposing with sulphuretted hydrogen, filtering and distilling one half. The distillate smelled of the toadstool but was not poisonous. The residue in the retort evaporated to an extract, and, treated by ether, gave a crystalline crust by its evaporation, three grains of which killed a kitten in a few minutes. Buchner thinks it probable that the poison is an organic base in combination with boletic and fungic acids. (*Ann. of Pharm.*, April 1852.)—ED. AMER. JOUR. PHARM.]

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*A Pharmaceutical Society in Italy.*—In Turin a Pharmaceutical Society has, at last, been established, with a staff of officials, consisting of a president, vice-president, general secretary, treasurer, censors, and two under secretaries. This is a wonderful progress for these oppressed but gifted people, whose rulers have heretofore even suppressed discussion on scientific subjects. In fact, it is related that so heartily do those creatures of kingcraft, the police, hate everything in the shape of freedom, and at the same time are so ignorant, that they once stopped a chemical work from passing the frontier, because one of these worthies, in his zeal, took the trouble of looking through the book and found in a passage describing some chemical decomposition, the words, "that iodine became free." Of course, nothing in Italy could be allowed to become free, not even iodine!—*London Annals of Pharm.*

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*Adulteration of Guaiacum Wood.*—HURAUT has found that guaiacum wood is mixed with the shavings of other woods. In order to detect the adulteration it is only necessary to take advantage of the behavior of guaiacum wood towards oxidizing agents. If the wood is treated with a solution of chloride of lime it assumes a green color within a few seconds, while other woods either retain their natural color or are rendered paler, but never become green.—*Ibid*, from *Journ. de Pharm. et de Chim.*

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*On the presence of Amygdalin in various plants.*—WICKE has continued his previous investigations on this subject. He submitted the various buds and bark of *Sorbus aucuparia*, *S. hybrida*, *Amelanchier vulgaris*, *Cotoneaster vulgaris*, and *Prunus padus* to distillation, and tested the distillate for hydrocyanic acid. This was done in the autumn in order to determine whether amygdalin was not formed until the process of vegetation commenced, or was stored up in the plant during the autumn. The results which he obtained were in favor of the latter view, and in this respect amygdalin behaves in a manner analogous to starch, with which it has the further peculiarity in common that it decreases in quantity during the period of growth. It would also appear as if the amygdalin of the amygdalaceæ and pomaceæ

took some share in the formation of cells, a conjecture which is supported by the circumstance that the amygdalin in plants belonging to the two groups is chiefly contained in the fruit kernels. On comparing the small quantity of buds which were employed for the experiments in the autumn with the far larger quantity of young shoots to which his previous communication referred, and estimating the quantities of hydrocyanic acid contained in the distillates in each case, the above conjecture becomes almost a certainty. The bark and buds of *Prunus padus* contain a much larger quantity of ethereal oil in the autumn than was found in his previous examination.—*Ibid*, from *Ann. der Chim. und Pharm.*

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*Adulteration of Arnica Leaves.*—ZÖLFFEL states that he received from a drug dealer, under the name of *Arnica*, leaves which were altogether different from those of this plant. They were palmated, with five lobes, incised at the apices, and serrated, the teeth being ciliated. On closer examination they proved to be the leaves of *Astrantia major*.—*London Pharm. Journ.* from *Archiv. der Pharmacie*.

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*Permanganate of Potass.*—This salt has lately been recommended in some forms of urinary disease, and it is probable that it possesses medicinal properties that demand a fuller investigation. The dose of the permanganate of potass is from one to three grains in solution, with three or four tablespoonfuls of water. This dose may be given three times a day, shortly before meals. A London medical practitioner, Mr. Sampson, has published in the *Lancet*, an account of its successful employment in diabetes.—*London Ann. of Pharm.*

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*Boracic Acid.*—A new source of this important substance has recently been discovered in South America; beds of native borate of lime having been found in Iquigne, in the vicinity of the deposits of nitrate of soda. The borate appears to exist in considerable quantity, associated with beautifully crystallized glauberite, or native sulphate of soda, similar to the well known salt which occurs in the neighborhood of Madrid. The first shipment of the borate was recently sold at Liverpool, at 60s. a cwt.—*Ibid*, from *Journ. of the Society of Arts*.

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*Statistics of the Philadelphia Gas Works.*—The following Statistics are selected from an article in the Franklin Institute Journal, noticing the 18th annual Report of Mr. Cresson the Engineer.

The total amount of coal used in the retorts was 680,792 bushels, which yielded 216,216,000 cubic feet of gas, and 855,512 bushels of coke. On an average therefore a bushel of coal yielded 316.13 cubic feet of gas, and 1.26 bushels of coke.

The total length of the street main pipes now laid, (in the City proper,) varying from 2 to 20 inches in diameter, is 144 miles.

The Philadelphia Gas Works is the largest, and was one of the first establishments of the kind in the United States; and the price of gas is

lower than from any other works in the Union, being but \$1.90 per thousand to customers making prompt payment. Its growth has been so rapid as to render necessary a removal of the manufacturing department, owing to want of space in its present position. The gasometers, however, will remain at the old place; they are eleven in number, and of the following sizes; eight single, 50 feet diameter, 20 feet high; two telescopic, 80 feet by 40 feet; and one telescopic, 140 feet diameter, and 70 feet high, which last is still the largest in the world. At the new works the trustees are erecting a grand distributor, 160 feet diameter by 96 feet, telescopic, which will hold nearly two millions cubic feet. The average daily consumption during the past year has been about 600,000; the maximum consumption for 24 hours was 1,123,000 cubic feet.—*Journ. Frank. Inst.*

## PHILADELPHIA COLLEGE OF PHARMACY.

### COMMENCEMENT—1853.

The Annual Commencement of the College was held on Thursday evening, March 31st, at half past seven o'clock, in the Musical Fund Hall.

PROF. PROCTER having briefly stated the character of the Institution and the object of the occasion, the Degree of Graduate in Pharmacy was conferred, on behalf of the Board of Trustees, by its Presiding Officer, Dr. JOHN HARRIS, on the following gentlemen:

#### *Graduating Class.*

#### *Subject of Thesis.*

BACHMAN, ALEXANDER,	Penna.	Tannic and Gallic Acids.
BONSALL, CHARLES T.	N. Jersey	Stearoptene of Oil of Monarda, &c.
CHESTON, ELIJAH, Jr.	Penna.	Arctium Lappa.
DAVIS, JOHN W.	Penna.	Sanguinaria Canadensis.
FAUNCE, JOHN H.	Penna.	Camphor.
GUTEKUNT, FREDERICK,	Penna.	History of Metallurgy, &c.
HARRIS, J. HENRY.	Penna.	Salix.
OGDEN, EDWARD H.	Penna.	Asclepias Tuberosa.
POLLARD, OSCAR,	Penna.	Cannabis Indica.
PYLE, J. LINDLEY,	Penna.	Rhus Radicans.
ROBINSON, EDWARD T.	Virginia.	Syrupus Ferri Iodidi, &c.
SAVERY, WILLIAM, Jr.	Penna.	Rumex Crispus.
SHEAFF, JOHN F.	Penna.	Coptis Trifolia.
SHROM, CHARLES F.	Penna.	Pinos Verticillatus.
SOUTHALL, TURNER H.	Virginia.	Analysis of California Cinnabar.
STEVENS, HENNELL,	Penna.	Glycerine.
WATSON, WILLIAM J.	Penna.	Rhus Glabrum.

The Valedictory Address was delivered by PROF. ROBERT BRIDGES.

The exercises of the occasion were attended with music from the Orchestra under the direction of Mr. B. C. CROSS.

ALFRED B. TAYLOR,

Secretary of Board of Trustees.



## Minutes of the College.

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At a stated meeting of the Philadelphia College of Pharmacy, held Third Month 29th, 1853. Vice President Charles Ellis in the Chair. The minutes of the last stated meeting were read and approved. The minutes of the Board of Trustees were then read, by which the College is informed that Thomas H. Montgomery, Bradford Ritter and Henry M. Troth, graduates of the College, were elected members by the Board of Trustees.

It also learns that the Examining Committee and Professors of the Philadelphia College of Pharmacy, having reported that each of the following named Candidates had presented a Thesis and certificate of character and apprenticeship, had passed a satisfactory examination, and were recommended as worthy of the Degree of Graduate in Pharmacy, that honorary distinction was conferred on them by the Board of Trustees:

Alexander Bachman,	Edward T. Robinson,	Frederick Gutekunst,
Elijah Cheston, Jr.,	John F. Sheaf,	Edward H. Ogden,
John H. Faunce,	Turner H. Southall,	Lindley J. Pyle,
J. Henry Harres,	Charles T. Bonsall,	William Savery, Jr.,
Oscar Pollard.	John W. Davis,	Charles F. Shrom,
Hennell Stevens,	William J. Watson.	

The Delegates appointed at the last annual meeting to attend the National Pharmaceutical Convention, reported as follows:

### *To the Philadelphia College of Pharmacy.*

The Delegates appointed at the last annual meeting respectfully report, that the Convention was held in Philadelphia, and at the Hall of this College, in accordance with an invitation extended by the Board of Trustees, through the *Journal*, and they herewith present a printed copy of its proceedings. By the statements and documents therein contained, it will be perceived that the Convention resolved itself into a permanent body, to meet annually, assumed the title of "The American Pharmaceutical Association," and adopted a Constitution and Code of Ethics, copies of which are appended to the proceedings.

Several subjects engaged the deliberation of the Convention, the principal of which were the *Drug Law* and its working—the Sale of Poisons—the subject of Secret Medicines—and Pharmaceutical Education and Organization.

An Article of the Constitution declares that "every local Pharmaceutical Association is entitled to send five delegates to the annual meetings."

In accordance with this clause, it will be necessary for the College to appoint five delegates to attend the meeting of the Association to be held at

Boston, on the 24th of August next, to act as their Representatives at the meeting.

CHARLES ELLIS, }  
W. PROCTER, JR., } On behalf of the Delegation.

*Philadelphia, 3d mo, 1853.*

The following Report of the Publishing Committee, accompanied by a statement of the financial condition of the *Journal*, was read and accepted:

*To the Philadelphia College of Pharmacy.*

The Publishing Committee respectfully report, that since their last communication the *Journal* has been regularly issued. In accordance with the hints contained in the Report to the last annual meeting, the committee have deemed it advisable, after careful consideration, to enlarge the size of the volume by increasing the frequency of issue to six times a year, preserving the size of the numbers at 96 pages as heretofore. By this arrangement, the subscribers receive the *Journal* on the first of every alternate month, commencing with January, and have 576 pages, instead of 384, advantages which many of them have not failed to appreciate.

The number of copies printed has been increased one-third. To partially meet the greatly-increased expenditure occasioned by these changes, the Committee have fixed the price at three dollars per annum, or five dollars for two years in advance, a charge which has been cordially met by a large number of the subscribers.

The variety of matter embraced in the *Journal* continues unabated, and the disposition to support the work, in a scientific point of view, has not retrograded, although the number of original communications is smaller than it should be, in view of the many pharmacutists who are capable of making observations worthy of record.

The annexed exhibit of the Treasurer shows the state of the finances to be healthy; yet the Committee believe that until the experiment now in course be fully tried, the funds of the Committee should not be drawn on in favor of the sinking fund committee.

CHARLES ELLIS,                      A. B. TAYLOR,  
PROF. BRIDGES,                      E. PARRISH,  
W. PROCTER, JR.

*March 28th, 1853.*

At last Report there was a balance in the hands of the Committee, of	\$620.20
Receipts through the year,	1032.42
	<hr/>
	\$1652.62
To expenses of printing, editing, collecting, &c.,	1166.70
	<hr/>
Leaving balance in hands of Committee,	\$485.92

The Committee on Latin Labels made a satisfactory Report, which was accepted.

On motion of Professor Procter, the following Resolution was adopted:

Resolved, That this College approves of the objects and proceedings of the National Pharmaceutical Convention, held in Philadelphia, October, 1852, and cordially tenders its support to the American Pharmaceutical Association.

The College proceeded to the annual election of officers, and also for five delegates to the next meeting of the Association, to be held at Boston. After a recess, the Tellers reported that the following members had re-

ceived a majority of votes, and they were accordingly declared duly elected to the respective offices :

*President*, Daniel B. Smith,  
*Vice Presidents*, Charles Ellis and Samuel F. Troth,  
*Secretary*, Dillwyn Parrish,  
*Treasurer*, Ambrose Smith,  
*Corresponding Sec.*, Joseph C. Turnpenny.

*Publishing Committee*,

Charles Ellis,      Prof. Robert Bridges,      Edward Parrish,  
                          Alfred B. Taylor,                      William Procter, Jr.

*Trustees*,

Warder Morris,      Edward Parrish,      William Procter, Jr.,  
 Robert Bridges,      Daniel S. Jones,      John H. Ecky,  
                          William P. Troth,      Caleb H. Needles.

*Committee on Sinking Fund*,

Warder Morris,      Samuel F. Troth,      Ambrose Smith.

*Delegates to the American Pharmaceutical Association*.

Daniel B. Smith,      William Procter, Jr.,      Charles Ellis,  
                          Alfred B. Taylor,                      Charles Bullock.

On motion it was ordered that the Delegates to the Association be authorized to fill any vacancies which may occur in their body.

It was ordered that the College proceed to the election of Honorary Members, which was deferred from the last stated meeting, and, on motion, the rule requiring an election by ballot was suspended, and the College proceeded to elect the candidates *viva voce*. Since the last meeting of the College, Dr. Jonathan Pereira, whose name was at that time proposed, has deceased. The question being taken, the following gentlemen were declared duly elected, and the Corresponding Secretary was requested to furnish certificates of honorary membership, accompanied by a suitable letter, to each :

Theophilus Redwood, London,  
 Jacob Bell,      do.  
 Sir Wm. J. Hooker,      do.  
 Thomas Graham,      do.  
 William Gregory, M. D., Edinburg,  
 Asa Gray, Cambridge, Mass.,  
 William Darlington, M. D., West Chester, Pa.,  
 R. Donovan, Dublin, Ireland,  
 Sir R. Kane,      do.      do.  
 Leopold Gmelin, Heidelberg, Germany,  
 E. Soubeiran, Paris,  
 E. Dumas,      do.  
 C. Gerhardt,      do.  
 M. Regnault,      do.  
 Justus Leibig, Munich, Bavaria.

The following communication from the Executive Committee of the Pharmaceutical Association was read, and referred to the Board of Trustees for further action :

*To the Philadelphia College of Pharmacy.*

The Executive Committee appointed by the late Pharmaceutical Convention, respectfully present the following resolution and queries for your consideration and action, viz :

Resolved, That the Executive Committee be requested to obtain, through the several colleges of pharmacy and pharmaceutical associations, previous to our next annual meeting, answers to the following questions, as far as expedient :

1st. How many apothecaries and druggists are there in each of the principal cities and towns of the United States ?

2d. What organizations exist in the several States, and what is the number of their members as compared with the number of druggists and apothecaries in the localities which they include ?

3d. How far is the business of dispensing medicines separated from the office of prescribing ?

4th. Have you any information in reference to the practice of our art, and the professional character of its practitioners, in different localities, likely to be of advantage to the Association in promoting the objects it has in view ?

5th. Are there any State laws for the protection of the interests of the profession of pharmacy, for the suppressing of empiricism, or in reference to the sale of poisons ?

On behalf of the Executive Committee,  
*Philadelphia, March 28th, 1853.* WILLIAM PROCTER, JR., Chairman.

The College then adjourned. DILLWYN PARRISH, Secretary.

NOTICE.

**AMERICAN PHARMACEUTICAL ASSOCIATION.**

The annual meeting of the American Pharmaceutical Association will be held at Boston on the 24th of August, 1853. The object of the Association being the advancement of Pharmacy in the United States, it is desirable that a general interest in its favor should be created among the pharmacutists and druggists. According to the requirement of the Constitution, the following conditions of membership are published, and an invitation is hereby extended to all who are eligible to membership and who feel an interest in the Association, to attend the ensuing meeting.

"SECTION 2d, *Article 1st.*—All pharmacutists who shall have attained the age of 21 years, whose character, morally and professsionally, is fair, and who, after duly considering the obligations of the Constitution and Code of Ethics of this Association, are willing to subscribe to them, are eligible for membership.

"*Article 2d.*—The members shall consist of Delegates from regularly constituted Colleges of Pharmacy and Pharmaceutical Societies, who shall present properly authorized credentials, and of other reputable pharmacutists, feeling an interest in the objects of the Association, who may not be so delegated, the latter being required to present a certificate signed by a majority of the delegates from places whence they come. If no such delegates are present at the meeting, they may, on obtaining the certificate of any three members of the Association, be admitted, provided they are introduced by the Committee on Credentials."

"*Article 5th.*—Every local Pharmaceutical Association is entitled to send five delegates."

*Philadelphia, 4th mo. 11th, 1853.*

DANIEL B. SMITH, President.



## Editorial Department.

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THE AMERICAN PHARMACEUTICAL ASSOCIATION.—The period when this body will convene is rapidly approaching. In accordance with the Constitution, the President is required to publish a *call* at least three months prior to the time of meeting, and we invite attention to the preceding document issuing from that officer.

It is much to be desired that the next meeting of the Association should be full and interesting. The arduous labors of organization having been accomplished, the coming session should be devoted to consolidating the Association, and to measures calculated to promote the interest of Pharmacy throughout the country. Members will come to the meeting with a clearer view of the labor before them, and new members prepared to take part at once in the business. There is no need of the question "What is to be done?" but there is need to know "how is it to be done?" First, we want a great, uniting, harmonizing, liberalizing and enlightening influence to enter the profession; to soften prejudices, to moderate or subdue jealousies, to liberalize competition, to spread knowledge broad-cast, to excite ambition after excellence, and to call forth and encourage a feeling of brotherhood among pharmacutists. Speaking for the entire body who dispense medicines in the United States, we need to be more sensible of our ignorance of what constitutes a true pharmacist; we lack a desire to excel in our calling for the sake of the profession; we require a more liberal basis in our intercourse with each other, by which unity of action may protect us from the many evils flowing out of an excessive competition, and we need the moral courage and energy that will rid the professional boundaries of the incubus of quackery and charlatanry. Further, the public need to be enlightened, also. The people, in the long run, will adopt the rational side of a question, if they examine both. They need to be awakened to the advantages arising from a better class of dispensers of medicines—who are governed by principle and conscience as well as by interest—who will refuse to sell them bad drugs when tempted by competition—and who will decline to furnish them with quackery, and will give them a sufficient reason for so doing. The position of apothecaries and druggists in the United States, as regards quack medicines, is a peculiar one. The circumstances of a sparsely settled country, where physicians and apothecaries are thinly scattered, by throwing the people on their own resources, has been one of the most powerful causes of the origin and growth of that almost universal disposition to seek the aid of this class of medicines, which *boldly promise* to supercede the necessity of both physician and apothecary, until now the whole community is tainted, from the most educated members of the legal and clerical professions, down through the mercantile, manufac-

turing and agricultural classes to the isolated dweller of the distant prairies of the West. This inclination to resort to secret medicines, is stimulated through every available medium, by those pecuniarily interested, in such bold and undoubting language, and in every form of testimony their ingenuity can invent, that the alleged efficacy of the medicines seems more probable than that such positive testimonials should be based on a tissue of falsehood and deceit. Quacks know the influence which the names of druggists and pharmacutists lend in their favor, and hence they seek them for agents, and extensively circulate their lists of agencies. Under these circumstances, is it to be wondered at that quackery is intimately interwoven with the pharmacy of the United States? Is it surprising that the temptation to gain should not only induce us to supply the demand thus unrighteously created, by acting as agents for the quack, but in too numerous instances, influenced by their rapid accumulation of wealth, to plunge partially or wholly into the defiling current, and assume the livery of unblushing empiricism? It is against this seductive influence that we are to be induced to exert ourselves; it is with this double-headed monster, enrobed in such deceitful and enticing garments as to disarm our sense of insecurity, that we are to do battle, if we hope to elevate our profession to the position it should occupy in the scale of useful scientific arts. Alone, we can do but little. It is an old saying, "in union there is strength." But the combination of integral weakness and impotency never produced power; the hemp-fibre must have its native toughness unimpaired to produce the strong cable. The individuals of a nation must possess virtue to afford a strong government. So, in pharmaceutical reform, there must be, individually, a sincere desire to be free from existing abuses, accompanied by a determination equal to the attendant sacrifice, before any effort against the evils that beset our profession,—only one of which has been depicted,—can be ameliorated or removed.

We believe there exists among the apothecaries and druggists of this country many men equal to the occasion. Let us hope that they will meet in the American Pharmaceutical Association, and, gathering strength by union, effect something toward the desired reformation.

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**DRUG THIEVES.**—We give place to the following communication, to put our city brethren on their guard against accidentally and unintentionally countenancing a form of villainy, that is not new to our city. Several years ago, a drug house suffered severely in the same manner, and it is certainly the duty of every apothecary to avoid purchasing drugs under circumstances leading to suspicion of the honesty of the party offering them, and to assist in detecting the guilty.

To the Editor of *The American Journal of Pharmacy*.

Considerable losses have been sustained from time to time by the trade, through the dishonesty of persons employed in various establishments. The police reports, a few days since, chronicle a series of thefts from a wholesale Druggist of this city, which, it appears, has been carried on for a long time; the value of the property taken is ascertained to be about two thousand dol-

lars. Opium, Indigo, and Hydriodate of Potash, were the favorite articles, while Prussian Blue, Liquorice, Cochineal, Gum Arabic, and other articles were stolen in more limited quantities. The object in calling attention to the subject in this article is, to express in the strongest terms of disapprobation, a conviction of the impropriety of dealers buying articles from unknown persons, or those not legitimately engaged in the business. The presumption is, that, in ninety-nine cases in the hundred, goods so offered are dishonestly obtained, especially when the persons are willing to take less than the market price.

"The receiver is as bad as the thief," and in some instances may be worse. Certain it is that the purchasers in making a market for the thief, furnish an inducement for him to steal. If thieves and their accomplices could find nobody willing to buy, it would be the most effective means of protecting the community.

Persons buying goods under the circumstances that have been alluded to, justly forfeit the confidence of honorable men. The names of quite a number of individuals, hitherto of good standing, to whom the goods stolen from D. L. Miller, Jr., can be distinctly traced as having been sold, are known. That some have purchased thoughtlessly there can be no doubt; such should make immediate restitution to the owner. The resolution to abstain wholly from such purchases hereafter, would be strengthened by the recollection of a previous loss. There are few things much more mortifying than to have one's name appear in the details of the trial of such cases of theft, as purchasers of articles from colored laborers, foreign grocers and tavern-keepers, or unknown street-hawkers. In this predicament, it is not improbable that some persons may find themselves, who, by failing to make restitution, leave the presumption that they are willing to profit by such depredations.

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NATIONAL SCIENTIFIC EXPLORATORY EXPEDITIONS.—It is gratifying to observe the increasing disposition in our Government to send exploring expeditions to South America, Africa, and the great West, to develop the commercial or national resources of those countries, and open new fields for the merchant and the emigrant. The immense importance of attaching Scientific Corps to these parties should not be overlooked. Of the several departments of Natural History none have so strong an influence on medicine and pharmacy as Botany, and it is very desirable that the botanical gentlemen who may accompany these voyages should be able and disposed to profit by the crude, but often useful remedies, that aboriginal sagacity may have discovered in the forests and fields of the countries visited, and to bring with them abundant specimens for experiment at home.

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TULLY'S MATERIA MEDICA.—We have received the fourth number of this work, for February. "The means of ascertaining the powers of new and previously unknown articles," are continued, through their natural history affinities, sensible properties and chemical composition, &c. We will defer a notice of its contents at present.

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OUR EXCHANGES.—It may be well to state for the information of some of our Exchanges who are in the habit of publishing the names of the Editors



of the Journals they receive, that neither Dr. Carson, Dr. Parrish, nor Dr. Procter, has charge of the Editorial department of this Journal, but simply William Procter, Jr., and that by crediting accordingly they may save those gentlemen, as well as the Editor, some trouble at the Post Office.

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MASSACHUSETTS COLLEGE OF PHARMACY.—We extract the following statement regarding the above institution from the Boston Medical and Surgical Journal for March 16th, 1853 :

“At the Annual Meeting of the Massachusetts College of Pharmacy, held at the rooms of the College in Masonic Temple, on Monday, March 9th, the following members were elected the officers for the ensuing year.

“President, Daniel Henchman. 1st Vice President, Thomas Restieaux. 2d Vice President, Samuel M. Colcord. Corresponding Secretary, William A. Brewer. Recording Secretary, Henry W. Lincoln. Treasurer, Samuel N. Brewer. Auditor, Joseph Burnett. Trustees, Thomas Farrington, Ashbel Boyden, Henry D. Fowle, Andrew Geyer, Joseph T. Brown, Samuel R. Philbrick, T. Larken Turner, William Brown.

HENRY W. LINCOLN, Secretary.

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*Hand-Books of Natural Philosophy and Astronomy.* By DIONYSIUS LARDNER, D. C. L., &c. *Second Course.* Heat—Magnetism—Common Electricity—Voltaic Electricity. *Illustrated by upwards of 200 Engravings on Wood.* Philadelphia. Blanchard & Lea, 1853. pp. 451, 12mo.

These works are written with a view to simplify and render practical the import truths of physical science, without, at the same time, omitting those details in the absence of which they would convey but a smattering of the subject; and will very much facilitate their comprehension and acquisition by those readers who seek in physics a collateral aid in the prosecution of their professional or general studies.

The first part of the present volume is devoted to Heat, the laws of which are very thoroughly elucidated, and applied to ordinary phenomena. As regards Pharmacy, it is not too much to say that the principles set forth in this part of the book have a bearing and influence of the very first importance. The most valuable and indispensable processes of the apothecary's art are based on these laws, and it is only when the operator is acquainted with them that he can conduct operations in the most enlightened and eligible manner. The second portion of the book is devoted to Magnetism and Electricity, and includes notices of electro-metallurgy and electro-telagraphy. The principles and construction of galvanic apparatus are extensively treated of and illustrated. The conspicuous position occupied by Electrical Science, since the wonderful developments that have grown out of Galvani's experiments, is due to the vast influence these discoveries have had on general science, and the arts that administer to the comfort and pleasure of man. The connection between electricity and meteorological phenomena, and its influence on climate, is interesting to every man who is accustomed to ask the cause of those changes which daily affect his comfort, and even to such is the volume before us possessed of deep instruction. It is little



to say, then, that this work is well worthy a place on the book shelf of the student of pharmacy, and in the library of the seeker after general knowledge.

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*Elements of Health and principles of Female Hygiene.* By E. J. TILT, M. D., Senior Physician to the Farringdon General Dispensary, &c. Philadelphia: Lindsay & Blakiston, 1853. pp. 436, 12mo.

This book, which is intended for the general reader and more especially for parents and women, belongs to the class of which Comb's Physiology is a type, and is calculated to be of essential service to those to whom it is addressed. Commencing with infancy, the hygienic treatment of children best calculated to develop their organic systems, and through these to reach their moral and intellectual natures, is pointed out. About two-thirds of the book is especially devoted to the physical education of girls and women, and the subject is treated in a manner so thorough and rational that it will, if attended to, not only guide the reader clear of many a Scylla and Charybdis in her own progress through organic life, but will enable her to be an intelligent agent of the physician in administering to the sufferings of infancy and childhood, and to understand those manifestations which instinctively foreshadow the approach to womanhood, and the neglect of which entails such lasting and melancholy results on so large a number of her sisters.

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*Report from the Select Committee on the Pharmacy Bill, together with the Proceedings of the Committee, Minutes of Evidence and Index. Ordered by the House of Commons to be printed, May 21, 1852.* pp. 245, folio.

We have received this interesting parliamentary document from JACOB BELL, Esq., Chairman of the Committee, and have been much interested in looking over the testimony, that the ample powers of the Committee enabled them to elicit from some of the most distinguished physicians, apothecaries, and pharmaceutical chemists of England. The "Bill" was "for Regulating the qualifications of pharmaceutical chemists," and subsequently passed both Houses of Parliament and became a law, but in a form much modified from the original draft. We propose to take an early opportunity to notice the character of this Act, which grants certain powers to the Pharmaceutical Society, and will then give some extracts from the testimony given before the Committee.

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*The Principles of Botany as Exemplified in the Cryptogamia.* By HARLAND COULTAS. Philadelphia; Lindsay & Blakiston.

This little volume is intended by the author as an introduction to the study of the simplest or least highly organized plants—those which are usually called flowerless, including mosses, ferns and lichens. The book is apparently the first of a series on structural botany, and the author diverges

from the ordinary pathway of botanical instructors in treating of this division of plants first. The book is neatly got up, and, at this season, when botanical pursuits are opening to the student, it appropriately appeals to him for an examination.

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NOTICE OF THE LATE DR. JONATHAN PEREIRA.—Dr. Pereira was born on the 22d of May, 1804, in the parish of Shoreditch, London. His father was a London merchant, in moderate circumstances. Young Pereira was placed in a classical school when ten years old, and at fifteen was articled to a surgeon, but his employer becoming deranged, his indentures were cancelled, and he became a student at the Aldergate General Dispensary in 1821, and attended the Lectures of Clutterbuck, Birkbeck and Lambe. Early in 1823 he became a candidate for the office of Apothecary at the Dispensary, and was fortunate in obtaining it, at 19 years of age. Whilst in this position he established a class of pupils, whom he privately instructed with great success, and also published several small works for their use, among which the *Selecta e Præscriptis* passed through 11 editions. In June, 1825, he became a member of the College of Surgeons, and in 1826 succeeded Dr. Clutterbuck as Lecturer on Chemistry at the Aldergate Dispensary. Having acquired the German and French languages, he commenced a systematic and thorough study of Materia Medica, which led him to form the idea of his great work, and to the accomplishment of which he brought the most indefatigable industry, often working sixteen hours a day. In 1828 he commenced lecturing on Materia Medica, and soon had the largest class in London. Early in 1832 he resigned his office at the Dispensary, and in the following September married and established himself in general practice. In the winter of 1832 he became Professor of Materia Medica at the New Aldergate School, and at the same time succeeded Dr. Gordon as lecturer on Chemistry at the London Hospital. In 1835-6-7 he published his lectures on Materia Medica in the Medical Gazette, and greatly added to his reputation both abroad and at home. Meanwhile, he had been diligently pursuing his researches, and in 1839 published the first volume of his *Elements of Materia Medica*, the second volume appearing in 1840, and a new edition in 1842.

In 1840 Pereira became a Licentiate of the College of Physicians, having in the previous year been appointed Examiner in Materia Medica at the London University. In 1842, after the establishment of the School of Pharmacy by the Pharmaceutical Society, Dr. Pereira delivered several lectures before the members, and in the fall of 1843 became the Professor of Materia Medica to the Pharmaceutical Society, and delivered the first complete course on the subject that had been delivered to British Pharmacutists. Here, adapting his subject to the wants of his listeners, he delivered, during a series of years, an annual course of lectures of the most thorough and interesting character. His connection with the Pharmaceutical Society was mutually fortunate; to himself by bringing the large re-

sources of the Society to bear on his favorite subject, and to them as the unrivalled teacher and writer on *Materia Medica*. His connection with the Society continued unbroken till the session 1851-52.

In 1845 Dr. Pereira was elected a Fellow of the Royal College of Physicians, and almost immediately afterwards became a member of the Pharmacopœia Committee, in which position he is believed to have rendered important service, and was curator to the museum at his decease. On resigning his Professorship at the London Hospital, in 1850, he transferred his most important specimens of *Materia Medica* to the Museum of the Pharmaceutical Society, and they are now its property.

In descending a stair case in the Hunterian Museum, he fell and ruptured the rectus femoris muscles of both legs, which confined him to his chamber for several weeks, but he was able to attend to his correspondence, and was moved about on an easy chair, when, about 10 o'clock on the evening of January 20th, he was suddenly carried off by an internal injury resulting from his fall, in the 49th year of his age, in the prime of his intellectual power.

Dr. Pereira's mind was characterized by an untiring perseverance in the pursuit of knowledge, which would not be satisfied until he had probed a subject to the bottom. No expense of time or money was spared to compass his pursuit of scientific truth, and in furtherance of his favorite study he kept up an extensive correspondence with all parts of the globe. His numerous papers in the *Pharmaceutical Journal* testify to his industry. The third edition of his great work, though not completed, was nearly so, and will be brought out under able superintendence, and will continue a lasting monument to his science and perseverance.

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DEATH OF DR. HORNER.—Prof. W. E. Horner, of the University of Pennsylvania, died in this city on the 13th of March, in the 60th year of his age. Dr. Horner graduated at the University in 1814, after service in the Late War as Surgeon; became adjunct Professor of Anatomy in the University in 1820, and succeeded Dr. Physick in 1831, in which position he continued until his death, which occurred from an organic disease of the heart which had seriously affected him for some years. An able teacher, and a thorough anatomist, Dr. Horner has departed in the midst of his honors, unstained in reputation and lamented by his numerous friends.

THE  
AMERICAN JOURNAL OF PHARMACY.

JULY, 1853.

ON GLYCERIN.

BY HENNEL STEVENS.

(*An Inaugural Essay.*)

Glycerin, in its chemical habitudes, bears many analogies to the alcohols, but also presents phenomena which are apparently irreconcilable with such a view of its chemical relationship. The experiments which this essay is intended to detail, were undertaken with a view of throwing some light upon the subject, that others, more skilled than myself, might determine its true character and assign its real position as a chemical substance.

Glycerin,  $C_6 H_5 O_6$ , is now admitted to be the hydrated oxide of the hypothetical radical Glyceryl,  $C_6 H_7$ . According to this view of its composition it corresponds with alcohol, with which it also agrees in uniting with sulphuric acid. Sulpho-glyceric acid, the resulting compound, in its salts, very much resembles the corresponding salts of sulpho-vinic acid.

Sulpho-glyceric acid, on being heated, froths up very much, and emits fumes of sulphurous acid, leaving in the retort a thick reddish liquid smelling strongly of sulphurous acid. Several experiments were tried, with a view of detecting any ethereal compound which might be produced during the re-action, but they all failed to show any evidence of the existence of such a product. The more immediate object of the author had been to prove the existence of a series of ethereal compounds having glyceryl as their base. It would, in my estimation, afford a more satisfactory explanation of the composition of the fatty bodies, stearin, olein, &c., by supposing them to be compound ethers of the glyceryl series, than by the method generally adopted of considering them as salts of glycerin. This theory is strengthened by the fact that in stearin and olein, and perhaps in others of the same nature, we can substi-



tute ether for the oxide of glyceryl without any change in the constitution of the compound.

Distilled with acetate of potash and sulphuric acid, glycerin yielded a solution of formic acid of sp. gr. 1.075, contaminated with a substance giving it an extremely pungent odor. To determine the nature of this latter substance, the distillate was saturated with carbonate of soda and re-distilled. The product thus obtained, which had still an acid re-action, was again saturated with carbonate of soda and finally rectified from chloride of calcium. This yielded a liquid heavier than water, nearly colorless, neutral to test paper, miscible in all proportions with alcohol and ether, not inflammable, and having an extremely penetrating and powerful odor, and an acrid, burning taste remaining on the tongue for a long time. The quantity obtained was too small, and not of sufficient purity for analysis.\*

All attempts to obtain an acid peculiar to the glyceryl series were unsuccessful, resulting uniformly in the production, either of formic acid alone, or a mixture of formic and acetic acids. As the experiments were unsuccessful, it is not deemed necessary to detail them.

The recent discoveries of the artificial formation of the flavors of various fruits as being due to the existence in them of different ethereal compounds, render the subject of the etherification of glycerin one of peculiar interest. It being a compound so widely diffused throughout the vegetable and animal kingdoms, all the fixed oils and the fats, with the single exception of cod-liver oil, having glycerin as a constituent, it is not impossible that various natural products, which agree in their composition with different compounds of oxide of glyceryl, may in reality be produced by the decomposition of glycerin under the influence of the vital force, and therefore may be produced by artificial means. Mannite, for example, has the same composition as oxide of glyceryl, and other natural products might be cited, which have a similarity of constitution. The artificial imitation of the results of natural processes, offers a field full of promise to the experimental inquirer, and among the

[\* This substance is *acrolein*, and is best obtained by the dry distillation of sulpho-glyceric and phospho-glyceric acids. (See Regnault's Chemistry, p. 670.) The reader is referred to a paper at page 357 for some interesting results on the subject of glycerin.—EDITOR.]

substances which appear most likely to repay a full investigation, glycerin is certainly not the least promising. A want of time and apparatus prevented me from pushing my researches as far as I could have wished, but my experiments, although unsuccessful in proving the correctness of my suppositions, have only given me a firmer belief that they will yet prove to be in accordance with facts.

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### ON PILLS OF SULPHATE OF QUINIA.

BY EDWARD PARRISH.

Although it is not always left to the discretion of the apothecary, what excipients to employ in compounding prescriptions, yet he should be so familiar with the subject as to be able to advise and instruct medical men in regard to those which are really most advantageous in the case of each of the leading remedies extemporaneously prescribed. There are few intelligent apothecaries who have not a salutary influence in modifying the views of neighboring practitioners in regard to the art of prescribing, and none who have not frequent occasion to exercise their own judgment, not only in the selection of excipients, but in other practical points in extemporaneous pharmacy.

There is, I believe, no medicine so frequently prescribed in the pilular form as the sulphate of quinia, and perhaps none, in making which into pills, there is so great a diversity of practice. The following substances are much employed as excipients for this object: Gum arabic, simple syrup, syrup of gum arabic, honey, molasses, conserve of roses, crumb of bread, flour, and simple water; and besides these, tannic acid, extract of cinchona, and various tonic, astringent and narcotic extracts, which assist, or in some way modify the effect of the alkaloid to meet particular indications in disease.

Most pharmacutists and medical practitioners have no doubt a preference for one or other of these, and, as is well known, there are in standard works several formulæ indicating similar preferences.

Dr. Pereira directs the pills to be made with conserve of roses, and in the three formulæ given in *Pharmacopée Universalle*, crumb of bread, honey and conserve of roses, are directed. *Dorvault* directs in *L'Officine*, for disulphate, the extract of wormwood; for the acid sulphate, conserve of roses. The pills are not officinal in

either of the British Pharmacopœias. In our own officinal directions, in the edition of 1850, gum arabic and honey are prescribed, while in that of 1840 gum arabic and syrup were the excipients.

The use of gum arabic and syrup was abandoned on account of the pills becoming insoluble by keeping. Gum arabic and honey used together are probably less objectionable. The omission of the gum entirely is perhaps an improvement, honey answering the purpose alone. As quinine is now more frequently prescribed in 2, 3 and 5 grain doses than in the one grain dose that used to be given, it is a desideratum to use an excipient which will produce the smallest possible increase of bulk at the same time that it gives a plastic mass.

The following formula is, I think, preferable to those in which gum arabic is employed, as well for the diminutive size as for the increased solubility of the pills :

Take of sulphate of quinia      12 grains.

Powdered tragacanth      1 grain.

Triturate the powders thoroughly together, and add sufficient water to form a plastic mass. Divide this into the required number of pills. Made in this way a three grain pill is not inconveniently large.

The use of simple water as an excipient is, I am told, common in domestic practice in the Southern States. The mass produced in this way possesses too little adhesiveness to render it satisfactory. Tannic acid has been used of late with a view to diminishing the intense bitterness of the quinine, but has not found favor generally, as far as my observation has extended. How far the known insolubility of the tannate of quinia in water should operate against this combination is a question for the therapist. Conserve of roses, in addition to its bulk, may be objectionable in this as in some other cases, on the score of containing tannic acid, which it does when made from *Rosa gallica*.

The following formula I have used for several years with great satisfaction to myself and to those physicians who have prescribed it. It was first suggested by a southern *medical student*.

Take of sulphate of quinia,      20 grains.

Aromatic sulphuric acid,      15 drops.

Drop the acid into the sulphate of quinia on a tile or slab, and triturate with a spatula until it assumes a pilular consistence ;



then divide into the required number of pills. Made in this way, a five grain pill is not inconveniently large.

Although the ingredients when mixed form a fluid, they soon thicken into a paste, and finally become quite solid, and so adhesive as to be readily divided and rolled into pills; care must be taken not to allow the mass to become too dry and brittle before dividing it, as it is liable to do if allowed to remain too long.

In this form a portion of the disulphate being converted into the soluble neutral sulphate, the preparation more nearly resembles the solutions in composition, and is believed to be more rapid and certain in its action.

When it is desired to incorporate other substances in powder with the quinine thus prepared, they should be added to the mass when it is just so soft that, upon their addition, it will immediately assume the proper consistence.

It is not, however, advisable to employ this process when any considerable quantity of other ingredients are prescribed with the quinine, unless a little syrup or honey is also added to prevent the too rapid hardening and consequent crumbling of the mass.

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#### LINIMENTUM ACONITI RADICIS.

By WILLIAM PROCTER, JR.

Take of Aconite Root in powder	four ounces,
Glycerin	two fluid drachms,
Alcohol a sufficient quantity.	

Macerate the aconite with half-a-pint of alcohol for twenty-four hours, then pack it in a small displacer and add alcohol gradually until a pint of tincture has passed. Distill off twelve fluid ounces, and evaporate the residue until it measures twelve fluid drachms. To this add two fluid drachms of alcohol and the glycerin, and mix them.

*Remarks.*—This preparation is intended as a substitute for aconitia as an external anæsthetic application. It is used in the following manner. Cut a piece of lint or muslin of the size and form of the part to be treated, lay it on a plate or waiter, and by means of a camel's hair brush saturate it with the *liniment*. Thus prepared it should be applied to the surface, a piece of oiled silk laid over and kept in place by an adhesive edge, or by a bandage.



The object of the glycerin is to retard evaporation after application to the skin, and the oiled silk is also used with this view. This preparation is twice the strength of the root, and is exceedingly active. It should not be applied to an abraded surface, and in its use the patient should be cautioned in relation to its poisonous nature, and avoid bringing it in contact with the eyes, nostrils, or lips.

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### EXTRACT OF LUPULIN.

By W. W. D. LIVERMORE.

Lupulin procured by the usual method of sifting is necessarily more or less mixed with powdered hops, and of course varies in activity. The object in proposing an extract is to present a preparation containing the medicinal principles of hops unimpaired, of uniform strength, and in a form convenient for pills. The process of preparation is as follows:

℞. Lupulin (commercial)	℥iv.
Alcohol	f℥viiij.

Mix in a percolator and allow to stand an hour. Then displace with alcohol until two pints of filtered liquor are obtained. Pour this liquor into a shallow dish and set aside to evaporate spontaneously.

In making larger quantities of extract it saves expense to distil off three-fourths of the alcohol previous to exposing the tincture to evaporation.

Lupulin thus prepared possesses the active properties of hops in an eminent degree, and is in a convenient form for prescription—℥j. of commercial lupulin yields upon an average ℥ij. of the prepared article.

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### TINCTURA CINCHONÆ FERRATA.

By ALFRED B. TAYLOR.

A preparation bearing this name has recently been introduced and prescribed to a considerable extent, which, from its name, promises more than from a critical examination of its properties it would seem to be entitled.

It was originally prepared at the suggestion of Dr. J. F. Meigs,

whose intention was to have a Tincture of Cinchona combined with iron, in such a form that it should not make a black, inky mixture. This object was proposed to be obtained by dissolving the ammonio-citrate of iron in the compound tincture of cinchona, previously deprived of its tannin by means of gelatin. Accordingly, a strong solution of gelatin was added to the ordinary Huxham's tincture, which had the effect of producing a copious precipitate, and as long as a precipitate appeared gelatin was added.

The tincture thus prepared, possessed the taste and smell of the original tincture, though considerably diluted, but was of a much lighter color, being very nearly the tint of sherry wine; on adding eight grains of the ammonio-citrate of iron to four ounces of this, there was still a precipitate made, showing either that gelatin would not remove all the tannin, or that the tincture contained some other precipitant of iron. This preparation was set aside as ineligible.

A tincture was then prepared by dissolving eight grains of the salt in four ounces of Huxham's tincture and filtering; this gave a handsome looking preparation, rather darker than Huxham's tincture, and was prescribed extensively.

Suspecting, from the amount of precipitate made by the addition of the iron, that a considerable part of the iron was separated, the following experiments were instituted: The precipitate made by dissolving 16 grs. of the ammonio-citrate of iron in 8 oz. of Huxham's tincture, was separated by filtration and ignited, so as to destroy the vegetable matter; it was then dissolved in chemically pure hydrochloric acid, to which a little nitric acid was added; the solution thus obtained was diluted and filtered, the filter being well washed with pure water. Ammonia was then added in excess, and the precipitate thus obtained being carefully washed and dried at a heat of  $212^{\circ}$ , (to which heat all the filters used in weighing were subjected before being counterpoised,) was found to weigh 3.8 grains.

16 grains of ammonio-citrate of iron were then ignited and treated as in the preceding experiment; the amount of sesquioxide of iron thus obtained was just six grains. From a comparison of these results it was found, that of the 16 grs. originally dissolved, there remained in the precipitate 10.13 grains.

An experiment was then tried with the clear tincture obtained

as above; two ounces, on being evaporated to dryness, ignited and treated as in the former examples, yielded .5 grain of sesquioxide of iron, indicating 1.33 grain of the citrate in the two ounces, or just two-thirds of a grain to each ounce.

Not being satisfied with this tincture, I was induced to examine the preparation as made by Mr. Samuel Simes of this city, which I understand has been extensively prescribed, and which purports to contain two grs. of citrate of iron to the ounce.

This preparation was similar in appearance to Huxham's tincture, and possessed a slight odor of brandy, as though partly made with that menstruum. The addition of solution of chloride of iron caused a deep black color, and solution of gelatine a copious flocculent precipitate, thus showing that the tincture had not been deprived of its tannin; on the addition of infusion of galls, a copious muddy precipitate was thrown down, which, after standing for some hours, became somewhat darker, but not nearly so dark as the color produced on adding infusion of galls to a solution of ammonio-citrate of iron,  $\frac{1}{4}$  grain to the ounce. From this experiment it was suspected to be, like the former preparation, deficient in iron; accordingly, two ounces of the tincture was evaporated to dryness and treated precisely as the tincture in the preceding experiment. The amount of sesquioxide obtained was less than three-tenths of a grain, thus indicating that each ounce of the tincture contained less than half a grain either of the citrate or ammonio-citrate of iron, whichever salt may have been used.

The conclusion to be derived from these results is, that the tincture, as at present prepared, is very inefficient as regards the iron ingredient, (and if more iron be added the tincture becomes inky in its character,) and theoretically must be inferior to the ordinary Huxham's tincture, where the effect of cinchona is desirable.

The citrate of iron and quinine is a much more elegant and scientific preparation, possessing all the properties which this tincture might be expected to possess, besides the advantage that it may be given in pill, powder or solution.



## PREPARATION OF MANNITE.

BY CHARLES T. BONSTALL.

The saccharine principle of manna being often in demand, it is quite troublesome to prepare it in the usual manner, by treating manna with boiling alcohol, and allowing the mannite to crystallize on cooling. It also becomes a dangerous operation in the absence of a well constructed water-bath, which, unfortunately, is too often wanting in many pharmaceutical shops, from the large amount of alcohol which must be employed, and the elevated temperature it is maintained at for some time, in order to be successful in extracting the mannite.

The plan I have pursued is the following: Dissolve manna in three times its weight of boiling water, and treat it with a small portion of solution of sub-acetate of lead, to separate gummy and resinoid matters; filter through muslin and precipitate the excess of lead by dilute sulphuric acid; filter through paper and concentrate with gentle heat to the consistence of syrup. Lastly, pour the syrup, while about the boiling temperature, into twice its bulk of cold alcohol, which will deposite the pure mannite, upon cooling, in snow white flakes. A very fat specimen of flake manna has yielded above 90 per cent.

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PROCEEDINGS OF THE PHILADELPHIA COLLEGE OF PHARMACY, IN RELATION TO THE INSPECTION OF DRUGS.

A SPECIAL MEETING of the Philadelphia College of Pharmacy was held at their Hall, 3d mo., 30, 1853.

Charles Ellis, Vice President, in the chair.

In the absence of the Secretary, Edward Parrish was appointed Secretary pro tempore.

The call of the meeting being read, the object was stated to be to consider the subject of the Inspection of Drugs.

The subject was then more fully introduced by several of the members, who urged, that in view of the probable change in the office of Special Examiner at this port, it was due to the position of this College, and to the important interests involved, that we should be heard in our corporate capacity in regard to the qualifications of persons who should be appointed to fill such offices.



The difference in the practice of Examiners at the various Ports of Entry was adverted to as a cause of annoyance. The opinion was advanced that, unless in the hands of competent and disinterested officers, the law was productive of more evil than good results. It cannot be disguised, that, as at present administered at this port, it has given great dissatisfaction, occasioning useless delays and unnecessary loss to importers; and, in many instances, embarrassing the operations of trade without any corresponding advantage to the public.

The construction given to that passage of the law referring to the Pharmacopœias and Dispensatories as standards, was a subject of discussion, and it was believed advantage would result from a fuller explanation of its meaning and intent, as originally designed by its framers.

A draft of a memorial to the Secretary of the Treasury, in relation to the proper qualifications for the office of Special Examiner, was submitted by Prof. Procter, and, on motion, it, together with the whole subject of the meaning and intent of the law, as brought under discussion at this meeting, was referred to a committee of five, which was appointed by the chair, as follows: Wm. Procter, Jr., Dr. John Harris, Thos. H. Powers, H. C. Blair and E. Parrish.

On motion, It was further resolved, that this Committee be authorized to send two delegates, taken from the College at large, to deliver the memorial, as finally perfected by them, to the Honorable Secretary of the Treasury, and to represent to that officer the views of this College in regard to the intention of the law and its proper construction, and that the said memorial and the credentials of the said delegates be stamped with the seal of the College and signed by its proper officers.

On motion, it was also resolved, that said delegation to Washington be authorized to draw on the Treasurer of the College for the amount of their expenses in carrying out this direction.

Then adjourned.

EDWARD PARRISH, Secretary pro tem.

The Committee to whom the memorial, etc., was referred, met at the College Hall on Tuesday, the 31st of May, at 4 o'clock, P. M., and having carefully revised the memorial referred to them, and considered the sense of the Special Meeting as related to in-

structing the deputation to be sent to Washington, concluded their labors by the appointment of Daniel B. Smith, President of the College, and William Procter, Jr., Chairman of the Committee, to that service.

#### MEMORIAL.

“To the Hon. James Guthrie, Secretary of the Treasury of the United States, the Philadelphia College of Pharmacy respectfully represent :

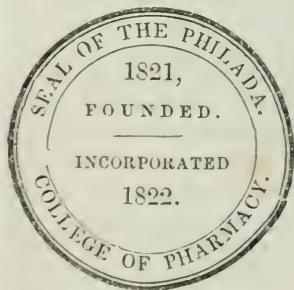
That their Institution was established more than thirty years ago, through the public spirit of a number of the Apothecaries and Druggists of Philadelphia, and incorporated by the Legislature of Pennsylvania, with the design of improving the character of the drug and apothecary business, and for affording a better and more scientific education to the younger members of their profession ; and now includes a large number of the best educated pharmacutists of that city. This College, feeling themselves intrusted with a care for that part of the public weal involved in the preparation and dispensing of medicines, and consequently with the condition of the drug market, (upon the soundness of which the healthy condition of pharmacy much depends,) did, for many years previous to the enactment of the Drug Law, appoint annually a “Committee of Inspection,” whose duty it was to keep a watch over the character of the drug market, and warn its members through their published Journal of the existence therein of spurious or deteriorated drugs. They have also interested themselves, from time to time, in special measures having the same object, and more especially, in connection with the other Colleges of Pharmacy, in regard to the *Act of Congress* requiring the inspection of imported drugs. Since the passage of that law, they have watched its influence on the quality of drug importations, and have been gratified with the improvement that has occurred in many particulars ; yet they are forced to admit that inferior qualities of drugs do gain admittance into the country, and that serious and perplexing difficulties have occurred at several of the ports, owing to the variable construction of the law by the Examiners, by which honestly disposed importers have been inconvenienced and annoyed, and have suffered considerable losses from delay and the expenses incident to a reconsideration of the Examiner’s decision.

Believing that the practical value of the law to the well disposed druggist and apothecary, and to the physician, and its usefulness through these to the community, depends in a great degree on the knowledge and faithfulness of the Examiners, we feel called upon respectfully, yet earnestly, to urge on your attention, in the exercise of the appointing power, the importance of a close scrutiny into the qualifications of these officers for the highly responsible duties assigned to them ; and we feel assured that in pointing out

some of the requisites of a good officer, you will give us credit for an honest desire to aid in the successful execution of the *Enactment*.

As a large proportion of the drugs imported into the United States are of a description requiring an intimate acquaintance with their physical and sensible properties, rather than their chemical constitution, in properly subjecting them to inspection, it is indispensable that the Examiner should have had a *practical pharmaceutical education*, especially as many mixed medical compounds are in the list of imported articles, the merits of which cannot be judged by the abstract chemist. He should also be a practical chemist, so as to perform the chemical analyses and testing required in the execution of his duties himself, and not be necessarily dependent on others for knowledge and skill which he is employed to exercise, and which should be exercised in view of all the circumstances pertaining to the drugs examined. These, with the business habits requisite to insure the government from imposition in regard to the value and construction of invoices, and the integrity without which all other qualifications are ineffectual, should be found in the Special Examiner of Drugs.

In view of these circumstances, we would earnestly recommend, other requisites being equal, that well educated pharmacutists, or, at least, individuals who have had a practical pharmaceutical education, should claim the preference among the candidates for the Examinership; trusting that your sense of the truth of the positions we have taken will induce you to act in accordance with them.



Signed

DANIEL B. SMITH, President.

CHARLES ELLIS, }  
SAMUEL F. TROTH, } V. Presidents.

DILLWYN PARRISH, Secretary.

At a Special Meeting of the Philadelphia College of Pharmacy, held May 30th, 1853, with Charles Ellis, 1st Vice President, in the Chair, it was directed that the above memorial to the Secretary of the Treasury of the United States be engrossed, duly signed by the officers, and the seal of the College affixed, and that two members of the College be deputed to present it to the Hon. Secretary at Washington, with such verbal explanations as may be



necessary to convey to that officer a proper understanding of the document.

Signed

EDWARD PARRISH, Sec. pro tem."

In accordance with their instructions, the deputation proceeded immediately to Washington, and obtained an interview with the Secretary of the Treasury. After stating the object of their visit, and presenting the Memorial of the College, they explained more fully the views entertained by that body in reference to the necessity of issuing new and more definite instructions to the Special Examiners, so as to avoid the irregularities that were liable to occur as at present; and also the importance of appointing men to the office of Examiners who are practically qualified by having had a pharmaceutical education. Mr. Guthrie replied, that he had become aware, since being in office, of the need of a revision of the instructions previously issued by the Department, and that Dr. Bailey, (the Examiner at New York), at his request, was engaged in preparing a paper for his consideration, which he believed would meet the views of the College, and which would be published in a few days. He further stated that, should the new instructions be inadequate to meet the just requirements of the Law, they could be modified.

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#### CIRCULAR OF INSTRUCTIONS TO THE SPECIAL EXAMINERS OF DRUGS.

[The following copy of the Treasury Circular, is from the North American of June 14th.]

TO PREVENT THE IMPORTATION OF ADULTERATED DRUGS AND MEDICINES.  
*To Collectors and other Officers of the Customs, under the act of 26th June, 1848.*

TREASURY DEPARTMENT, June 4, 1853.

It being represented to this Department, that much embarrassment has been experienced by officers of the customs, at some of the ports of the United States, in reference to the provisions of the act of 26th June, 1848, "to prevent the importation of adulterated and spurious drugs and medicines," it is deemed expedient, with a view to avoid future difficulties arising from misconstructions of the law, and to secure uniformity of practice at the several ports in carrying out its provisions with precision and efficiency, to furnish you with the additional instructions which follow, explanatory and in modification of the circular instructions addressed to you by the Department on the 8th July, 1848.

To avoid the recurrence of a difference of opinion between the



officers of the customs as to what particular articles of commerce should be considered drugs and medicines, and as such subject to special examination by the special examiner of drugs and medicines, it is thought proper to state that, in conformity with the evident spirit and intent of the law, it is required that all articles of merchandise used wholly or in part as medicine, and found described as such in the standard works specially referred to in the act, must be considered drugs and medicines, and that all invoices, therefore, of such articles, in whole or in part, must be submitted to the examination of the special examiner of drugs and medicines, before they can be permitted to pass the custom house.

In the examination on entry of any medicinal preparation, the said special examiner is to unite with the appraiser.

With a view to afford a reliable guide to the examiner of drugs and medicines, as well as to the analytical chemist, on appeal, in ascertaining the admissibility of such articles under the provisions of the law founded on their purity and strength, the following list is given of some of the principal articles, with the result of special tests agreeing with the standard authorities referred to in the law, all of which articles are to be entitled to entry when ascertained by analysis to be composed as noted, viz :

Aloes, when affording 80 per cent. of pure aloetic extractive.

Assafœtida, when affording 50 per cent. of its peculiar bitter resin, and 3 per cent. of volatile oil.

Cinchona Bark, when affording 1 per cent. of pure quinine, whether called Peruvian, Calisaya, Arica, Carthagena, Maracaibo, Santa Martha, Bogota, or under whatever name, or from whatever place ; or

Cinchona Bark, when affording 2 per cent. of the several alkaloïds combined, as quinine, cinchonine, quinidine, aricine, &c., the barks of such strength being admissible as safe and proper for medicine and useful for chemical manufacturing purposes.

Benzoin, when affording 80 per cent. of resin, or

“ “ 12 “ of benzoic acid.

Colocynth “ 12 “ of colocynthin.

Elaterium “ 30 “ of elaterin.

Galbanum, when affording 60 per cent. of resin :

“ “ 10 “ of gum and

“ “ 6 “ of volatile oil.

Gamboge, “ 70 “ of pure gamboge resin, and

“ “ 20 “ of gum,

Guaiacum, “ 80 “ of pure guaiac resin.

Gum ammoniac “ 70 “ of resin, and

“ “ 18 “ of gum.

Jalap, when affording 11 per cent. of pure jalap resin, whether in root or in powder.

Manna, when affording 37 per cent. of pure mannite.			
Myrrh,	"	30	" of pure myrrh resin, and
"	"	50	" gum.
Opium,	"	9	" of pure morphine.
Rhubarb,	"	40	" of soluble matter, whether in
root or powder; none admissible but the aticles known as East			
India, and Turkey, or Russian rhubarb.			
Sagapenum,	50 per cent. of resin.		
"	30 per cent. of gum, and		
"	3 per cent. of volatile oil.		

Scammony, 70 per cent. of pure scammony resin.

Senna, 28 per cent. of soluble matter.

All medicinal leaves, flowers, barks, roots, extracts, &c., not herein specified, must be, when imported, in perfect condition, and of as recent collection and preparation as practicable.

All pharmaceutical and chemical preparations, whether crystallised or otherwise, used in medicine, must be found on examination to be pure and of proper consistence and strength, as well as of perfect manufacture, conformably with the formulas contained in the standard authorities named in the act; and must in no instance contain over three per cent. of excess of moisture or water of crystallization.

Essential or volatile oils, as well as expressed oils used in medicine, must be pure, and conform to the standards of specific gravity noted and declared in the dispensatories mentioned in the act.

"Patent or secret medicines" are by law subject to the same examination, and disposition after examination, as other medical preparations, and cannot be permitted to pass the Custom House for consumption, but must be rejected and condemned, unless the special examiner be satisfied, after due investigation, that they are fit and safe to be used for medicinal purposes.

The appeal from the report of the special examiner of drugs and medicines, provided for in the act, must be made by the owner or consignee within ten days after the said report; and in case of such appeal, the analysis made by the analytical chemist is expected to be full and in detail, setting forth clearly and accurately, the name, quantity, and quality of the several component parts of the article in question; to be reported to the collector under oath or affirmation.

On such report being made a copy of the same will be immediately furnished by the collector to the special examiner of drugs and medicines, who, if the report be in conflict with his return made to the collector, and he have cause to believe that the appeal and analytical examination have not been conducted in strict conformity with the law, may enter his protest in writing against the reception and adoption by the collector of such report and analysis, until a

reasonable time be allowed him for the preparation of his views in the case, and their submission to this department for its consideration.

JAMES GUTHRIE,  
Secretary of the Treasury.

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## ON THE SALE OF POISONS IN NEW HAMPSHIRE.

*Concord, N. H., June 7th, 1853.*

To the Editor:

*Dear Sir,*—I observed in the March number of the excellent "Journal of Pharmacy," edited by yourself, a call for information concerning the sale of poisons in the various States. Not knowing whether or not you have any members of your Association in this State who would respond to your call, I have taken some pains to collect the following facts, and think they can be relied on as accurate. Of course, if any one answers your inquiries more fully or more acceptably, you are at entire liberty to throw this aside.

Numbering my answers to correspond to your enquiries, I reply, 1st, a State law exists, which is as follows:

"*Sec. 1.* Every apothecary, druggist, or other person, who shall sell any arsenic, corrosive sublimate, nux vomica, strychnia or prussic acid, shall make a record of such sale in a book kept for that purpose, specifying the kind and quantity of the articles sold, and the time when, and the name of the person to whom such sale is made, which record shall be open to all persons who may wish to examine the same.

"*Sec. 2.* The foregoing section shall not apply to physicians in their prescriptions or receipts to their patients.

"*Sec. 3.* Any person who shall violate the provisions of this chapter shall forfeit the sum of one hundred dollars, to be recovered by indictment in any court of competent jurisdiction, one half to the use of the county, and the other half to the use of the prosecutor."—*N. H. Compiled Statutes, Chap. 228.*

2d. This law was passed in 1848, and amended in 1850 by the addition of nux vomica and strychnia to the list of poisons. In its operation it is almost, if not entirely, ineffectual. After making diligent enquiry of the druggists in this and other large towns in the State, I feel authorized to say that not more than one in five of the druggists pretend to keep such a record as the law requires, and those that are kept are very imperfect. I have found that



some of our druggists were not even aware of the existence of the law. The law does no injury, but it cannot be said to do any great amount of good.

3d. All the conservative action among druggists themselves is what arises from their own sense of what is right and proper. There is no understanding among them as to such sales that I can hear of.

4th. Grocers and shopkeepers rarely, if ever, retail arsenic or any other of the poisons specified in this law. In some of the small towns the storekeeper sometimes keeps a little paregoric with some of the drugs in common use, such as rhubarb, but it is not usually the case. Perhaps more oxalic acid is sold than any other dangerous poison, but this is chiefly used by the shoemakers and other manufacturers who are aware of its power. No instances of poisoning by it have for several years come to my knowledge in this State.

I am yours respectfully,

EDWARD H. PARKER.

#### SALE OF POISONS IN INDIANA.

*Richmond, 5th mo. 3d, 1853.*

To the Editor of the American Journal of Pharmacy:

*Esteemed Friend,*—On the perusal of the last number of the Journal, I am reminded, by the publication of S. P. Peck's letter therein, of the request to furnish information relative to the sale of poisons in the various States. In complying on behalf of this section I can briefly say, that, in Indiana, neither the recently revised statutes nor the older ones, so far as I have any knowledge of them, make any provision for the sale of poisons.

In this place, (Richmond,) with a population of 3000 to 4000 persons, there are four professed druggists; but one of whom refuses to sell patent medicines; and that one alone keeps a record of the sales of poisons, naming the purchaser, the quantity he obtains, the stated use of the poison, the date of the purchase, and marking the outer wrapper *Poison*.

I believe the sale of arsenic, &c. is wholly confined to the drug stores in town; and whether it is kept by other dealers in the smaller towns in the State, I am unable to say at present.



Pounds of arsenic are sold at the foregoing stores annually, (and it is by far the principal poison purchased,) and professedly for the destruction of rats. Half an ounce and an ounce are the quantities generally bought. A few parcels of corrosive sublimate, (a drachm or so at a time,) are sold in the course of the year for veterinary purposes. No accident is known to have occurred from all these sales; and but one criminal application of poison during the last two or three years. Hence, a preparation (which I have had on hand for this period) for the ready formation of the hydrated peroxide of iron, remains as I first made it, unemployed.

Thy friend,

JOHN T. PLUMMER, [M. D.]

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REMARKS ON BOGOTA AND OTHER CINCHONA BARKS FROM  
NEW GRENADA, IN THEIR RELATION TO THE MANUFACTURE  
OF SULPHATE OF QUINIA.

By WILLIAM PROCTER, JR.

It is generally known that the Cinchonas valuable in medicine are found on the eastern slopes of the Bolivian, Peruvian, and New Grenadan Andes, at a considerable elevation, and that at least sixteen varieties have been found. It is also equally well known that the Bolivian bark called calisaya contains the largest percentage of quinia and commands the highest price, and that the medicinal value of the other varieties is rated in proportion to the quinia and cinchonia they contain. Chemists have shown that a close relation exists between the several alkaloids that have been obtained from the cinchonas, they being theoretically oxides of a common radical, yet varying in the proportions yielded by different species, and by the same species in different localities. The cause of this variation is an interesting question to the vegetable physiologist. Soil, elevation, the shade of associated trees, and probably other causes are concerned in the elaboration of these valuable constituents, and in determining their relative and absolute proportions.

Of the immense quantities of Bolivian barks exported from South America, more than nine-tenths are manufactured into sulphate of quinia. Knowing its superiority for this purpose, and aware of the indispensable necessity of sulphate of quinia to the

civilized world, and believing that their own mountain slopes contained all the bark available for this manufacture, the Bolivian Government established their famous monopoly, by which the supply was shortened and the price elevated until it arose from 45 cents to \$1.75 per pound. Seeing no end to this interference, the merchants and chemists of Europe have industriously sought new sources of supply, and during the last few years the mountains of New Grenada in the regions of Popayan and Bogota, have furnished barks which far exceed in quinia value the Carthagena barks described in the books. The introduction of these barks brought down the price of the monopoly bark to \$1.05, which has again risen in consequence of the large demand for material by the manufacturers of the United States, who have been precluded from using the barks of New Grenada by the construction put upon the Drug Law by some of the Examiners.

Of the immense exportation of calisaya bark from Bolivia the manufacturers of this country have consumed of late years as much as all the rest of the world together ; hence the importance to them of participation in the use of the Bogota, Pitaya, and other Grenadan barks which, within the past two or three years, have been exported to Europe to the extent of from 12,000 to 15,000 ceroons, and several varieties of which are sought after with an avidity that proves how highly they are esteemed by manufacturers of quinine.

That this demand is based on correct data there can be no doubt. Chemistry has advanced too far, and qualified analytical chemists are too numerous, for manufacturers of good character to risk their reputation merely to deceive the medical public for their own pecuniary interest. Without depending on foreign statements, it may be well to give a few results obtained in this city from barks from the regions alluded to. 1000 grains of each bark was treated.

These analyses being made solely to ascertain the quinia value of the barks, no attempt was made to determine the exact nature of the associated basic matter, which was believed to be either quinidin or cinchonin, or perhaps both. Other specimens of these barks have yielded but 4 grs., and even but 2 or 3 grs. of quinia per 1000 grs. of bark, but these would not be worked by the manufacturer.

1st. Bogota (Fusagasuga) Bark:	5th. Another specimen:
Cinchonia, or quinidin, or	Cinchonia, &c. . . 5.6 grs.
both, . . . 10 grs.	Sulph. quinia . . . 16 "
Sulphate of quinia . . 9 "	Extract . . . 16 "
Extractive residue . . 8 "	6th. Pitaya bark, marked Duque,
2d. Cinchonia, &c. . . 8 "	(from near Popayan):
Sulphate of quinia . . 19 "	Sulphate of quinia . . 25 grs.
Extract . . . 6 "	Extractive . . . 12 "
3d. A fibrous yellow bark from	7th. Another specimen, marked
Bogota:	San Antonio:
Cinchonia, &c. . . 8 "	Cinchonia, &c. . . 16 "
Sulph. quinia . . . 17 "	Sulphate of quinia . . 18 "
Extractive . . . 16 "	8th. Another specimen:
4th. Another specimen:	Cinchonia, &c. . . 20 "
Cinchonia, &c. . . 12 "	Sulphate of quinia . . 15 "
Sulph. quinia . . . 13 "	9th. Another specimen:
Extract . . . 10 "	Cinchonia, &c. . . 26 "
	Sulphate of quinia . . 17 "
	Extract . . . 30 "

Now, barks that will yield these quantities of sulphate of quinia, owing to their much lower prices, are profitably worked by the manufacturer to the rejection of every ingredient except the quinia, and there can be no good reason advanced why they should not be employed. As well might exception be taken to dolomite as a source of magnesia and its preparations, because it contains lime, deeming that magnesite only should be used. What is it to the physician or the apothecary whether the sulphate of copper he uses is made from the richest ore of Lake Superior, or old copper sheathing, if it is pure? Why, at this very moment a prize of four thousand francs, offered to the man who shall discover an *artificial* method of making quinia, or in failure of that, find a natural product that shall equal quinia as an antiperiodic, remains unclaimed in the hands of the treasurer of the Society of Pharmacy of Paris, and which was offered several years ago, in view of the supposed approaching failure of the natural source of this important medicine. Yet in view of all this, an officer of the United States, whose duty is to prevent the importation of *adulterated* drugs, medicines and medicinal preparations, refuses entry to an invoice of Bogota bark because it is "*one of the varieties of Carthagena bark, all of which are specified by the United States Pharmacopœia and Dispensatory*



as *unofficinal*!! Now what are the facts of the case? The U. S. Pharmacopœia says not one word about Carthagena bark, any more than it does about the barks in question, which have been thrown into commerce since the Pharmacopœia was published. The U. S. Dispensatory says, "Carthagena barks are not recognized by the Pharmacopœias." And why? Because, for the purposes required by these authorities, the three varieties of bark therein specified are deemed the best; yet by Pharmacopœia authority, under the name of "*Cinchona Pallida*," Loxa barks, so called, and analogous varieties, have admittance *ad libitum*, which contain but a trace of quinia, with from one to three per cent of cinchonia. I have examined a bark from the west coast without a trace of quinia and over three per cent. of cinchonia; yet under the construction lately put upon the law by the inspector at this port, of *officinal* and non-officinal, all such barks may enter.

But the new instructions [see page 302] issued by the present Secretary of the Treasury, dated June 4th, inst., have the following clauses:

"Cinchona bark, when affording *one* per cent. of pure quinia, whether called Peruvian, Calisaya, Arica, Carthagena, Maracaibo, Santa Martha, Bogota, or under whatever name, or from whatever place; or

"Cinchona bark, when affording *two* per cent. of the several alkaloids combined, as quinia, cinchonia, quinidin, aricine, &c., the barks of such strength being admissible as safe and proper for medicine, and useful for chemical manufacturing purposes."

These clauses establish a standard by which the Examiner can easily test all the cinchona barks, and will, if acted on, prevent the introduction of the inferior pale barks, and furnish the manufacturers of sulphate of quinia with the material they demand to enable them to compete with European manufacturers. The last clause is evidently intended to refer to the pale barks, which are *known* to contain less than one per cent. of quinia. Yet, if we are correctly informed, the Examiner of this port construes it to mean that one per cent. of quinia shall be found in the gross amount of alkaloids,—a forced construction, which will compel him to reject the entire range of pale barks, notwithstanding they are protected by his favorite word "*officinal*."



We are informed that the real grounds of the opposition of the Examiner to the introduction of Bogota bark is, that it contains only quinidine or some alkaloid different from quinine; and this is insisted on despite the results of analysis abroad and at home. If this is his conscientious opinion, why not openly say so in his rejection, that his opinion may be verified or disproved by an appeal to analysis, and not stand behind a technical word unknown in the law and misinterpreted by himself? If Bogota barks did not contain quinine, and were imported solely for manufacturing quinidin for adulterating quinia, the Examiner would have found support instead of opposition in this article.

We cannot let this subject pass without alluding to a recent case, in which a lot of English sulphate of quinine was condemned and rejected, apparently, because it was believed to have been made from Bogota bark. The following is a copy of the letter of rejection from the Deputy Collector to the importer:

“ *Custom House, Philada.* }  
*Collector's Office, May 20th, 1853.* }

J. K. SULGER, Esq.

SIR,—You are hereby notified that the case of Howards and Kent's Sulphate of Quinine, marked J. K. S. No. 1, imported by you per steamer City of Glasgow, on the 7th inst., has been rejected by the Special Examiner of drugs, as not being the officinal sulphate of quinine as furnished by the officinal yellow bark, viz., cinchona calisaya, and therefore specified by law as improper to be used for medicinal purposes.

Yours, &c.,

C. M. PREVOST, Dep. Collector.”

There is something about this document that would be amusing, did it not involve so much trouble, delay and loss to the importer. The Examiner in this act, at least, shows his consistency; yet, in doing so, has brought to light a new feature of the law; wherein it appears that sulphate of quinine is specified to be improper for medicinal use, unless made from calisaya bark!! What is “officinal sulphate of quinine,” but pure sulphate of quinine? Why is calisaya bark directed, but because it is the best for that purpose of the varieties recognized by the Pharmacopœia? For what purpose are the tests given at page 208 of that work, but as a *standard* to judge of the purity of the salt?

the very touch-stone really specified by law by which it should be judged. The U. S. Pharmacopœia directs oxychloride of antimony in the preparation of tartar emetic; as well might the Examiner reject foreign tartar emetic because it is made of the subsulphate or oxysulphuret.

At the request of Mr. C. H. Dingee, who sent me the foregoing copy of the Deputy Collector's letter, with a bottle of the rejected sulphate of quinine, an examination was made with the following results:

"1st. Ten grains of the suspected sulphate was not wholly dissolved at the temperature of  $212^{\circ}$  (Fahr.) by 250 grains of water, but formed a transparent solution with less than 320 grains. After the solution had stood 24 hours, the salt, which separated in crystals, when carefully collected and air dried, weighed 9.1 grains. The liquid from which the salt separated when evaporated to dryness, yielded .81 gr. of crystals, which re-acted with tests like the original salt.

"2d. Ten grains of the suspected sulphate was put into a test tube with 23 drops of water, two drops of sulphuric acid, and shaken until dissolved, after which 90 drops of ether and 30 drops of spirit of ammonia were added and shaken together. In a few moments the mixture separated into two transparent liquids without any solid or undissolved matter intervening; nor had any crystallization or other change occurred in the ethereal solution at the end of 36 hours.

"3d. Ten grains of the suspected sulphate dissolved in water by means of two drops of sulphuric acid, yielded a bulky white, uncrystalline precipitate on adding a slight excess of ammonia; by heating the tube the precipitate coalesced into a mass which, after being washed and dried, weighed 7.4 grains. A part of this dissolved in absolute alcohol, remained as a resin-like residue on evaporation without the formation of crystals.

"4th. (Kent's test.) Five grains of the suspected salt was dissolved in half a drachm of acetic acid, four drops of tincture of iodine added, and heat applied until the liquid became reddish brown and transparent. On cooling, the solution deposited numerous green, cantharides-lustred crystals of the iodo-sulphate of quinia of Dr. Herapath. (See page 317.)

"Finally, the suspected sulphate of quinine reacts with chlorine water and ammonia, and with chlorine water, prussiate of

potash and ammonia, as the pure salt, and in its form of crystallization agrees with the same."

From these results the opinion was given that the salt was free from impurity and of good quality and appearance. The sulphate was enclosed in a tall cylindrical "quinine bottle" with a red wax seal, with the words "quiniae sulphas" on it, and with a white label inscribed with "Sulphate of Quinine; Prepared by Howards and Kent, Stratford, London."

It has been stated that the Examiner considers the base of the "sulphate of quinine" in question as an alkaloid differing from quinia and quinidine;—perhaps B. quinine. It is to be hoped, for the sake of science, that he will describe its properties and draw the lines of distinction between it and quinia.

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#### ACT FOR REGULATING THE QUALIFICATIONS OF PHARMACEUTICAL CHEMISTS IN ENGLAND AND SCOTLAND.

Whereas, it is expedient for the safety of the public that persons, exercising the business or calling of Pharmaceutical Chemists in Great Britain, should possess a competent practical knowledge of Pharmaceutical and general Chemistry and other branches of useful knowledge: And whereas, certain persons, desirous of advancing Chemistry and Pharmacy, and of promoting an uniform system of educating those who should practice the same, formed themselves into a Society, called "The Pharmaceutical Society of Great Britain," which said Society was on the 18th day of February, 1843, incorporated by royal charter, whereby it was provided that the said Society should consist of Members who should be Chemists and Druggists, who were or had been established on their own account at the date of the said charter, or who should have been examined in such manner as the Council of the said Society should deem proper, or who should have been certified to be duly qualified for admission, or who should be persons elected as superintendents by the Council of the said Society: And whereas, it is expedient to prevent ignorant and incompetent persons from assuming the title of or pretending to be Pharmaceutical Chemists or Pharmacutists in Great Britain, or Members of the said Pharmaceutical Society, and to that end it is desirable that all persons, before assuming such title, should be duly examined as to their skill and



knowledge by competent persons, and that a register should be kept by some legally authorized officer of all such persons : And whereas, for the purpose aforesaid, and for extending the benefits which have already resulted from the said Charter of Incorporation, it is desirable that additional powers should be granted for regulating the qualifications of persons who may carry on the the business of Pharmaceutical Chemists : be it enacted, by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same;

I. That the said Charter of Incorporation, granted to the said Society on the 18th day of February, 1843, save and except such part or parts thereof as are hereby altered, varied, or repealed, shall be and the same is hereby confirmed and declared to be in full force and virtue, and shall be as good and effectual to all intents and purposes as if this Act had not been passed.

II. The Council of the said Pharmaceutical Society shall be and the same are hereby authorized and empowered to alter and amend the by-laws of the said Society, made and established under or in pursuance of the said Charter of Incorporation, and to make and establish such new or additional by-laws as they shall deem proper and necessary for the purposes contemplated by the said charter or by this Act ; provided always, that all such original by-laws, and all altered, amended, or additional by-laws, shall be confirmed and approved by a Special General Meeting of the members of the said Pharmaceutical Society, and by one of her Majesty's principal Secretaries of State ; provided also, that the existing by-laws of the said Society shall continue in force until the next Annual Meeting of the said Society, to be held in the month of May, 1853.

III. At all meetings of the said Society, at which votes shall be given for the election of officers, all members entitled to vote may give their votes either personally, or, in cases of residence exceeding five miles from the General Post Office, St. Martin's-le-Grand, London, by voting papers authorized by writing, in a form to be defined in the by-laws of the said Society, or in a form to the like effect, such voting papers being transmitted under cover to the secretary not less than five clear days prior to the day on which the election is to take place.



IV. The Council of the said Pharmaceutical Society shall, within three calendar months after the passing of this Act, appoint a fit and proper person as a Registrar under this Act, and the Council of the said Society shall have the power to remove the said registrar, or any future registrar to be appointed under this Act, from the said office, and from time to time to appoint a new registrar in the room of any registrar who may die, or retire, or be removed from office as aforesaid, and also to appoint and remove from time to time a deputy registrar, and such clerks and other subordinate officers as may be requisite for carrying out the purposes of this Act, and also to pay suitable salaries to the said registrar, deputy registrar, clerks, and officers.

V. The Registrar to be appointed under, or by virtue of this Act, shall from time to time make out and maintain a complete register of all persons being Members of the said Society, and also of all persons being Associates and Apprentices or Students respectively, according to the terms of the Charter of Incorporation, and shall keep a proper index of the register, and all such other registers and books as may be required by the Council of the said Society, and may be necessary for giving effect to the by-laws of the said Society, and to the provisions of this Act.

VI. All such persons as shall at the time of the passing of this Act be Members, Associates, Apprentices, or Students of the said Pharmaceutical Society of Great Britain, according to the terms of the said Charter of Incorporation, shall be registered as Pharmaceutical Chemists, Assistants, and Apprentices or Students respectively.

VII. The Registrar to be appointed under or by virtue of this Act shall be bound, on the application of any person paying one shilling, to certify under his hand whether or no any person whose name and address shall be furnished to him appears in the said register, or is a Member of the Pharmaceutical Society of Great Britain or not; and the certificate of such registrar, signed by the said registrar, and countersigned by the President or two Members of the Council of the said Society, shall, in the absence of evidence to the contrary, be sufficient evidence of the facts therein stated up to the date of the said certificate.

VIII. All such persons as shall from time to time be appointed under or in pursuance of the said Charter of Incorporation or the

by-laws thereof, or under this Act, shall be and the same are hereby declared to be fit and proper persons to conduct all such examinations as are provided for or contemplated by this Act, and shall respectively have full power and authority and are hereby authorized and empowered to examine all persons who shall present themselves for examination under the provisions of this Act in their knowledge of the Latin language, in Botany, in Materia Medica, and in Pharmaceutical and general Chemistry, and such other subjects as may from time to time be determined by any by-law; provided always that such examinations shall not include the Theory and Practice of Medicine, Surgery, or Midwifery; and the said examiners are hereby empowered to grant or refuse to such persons, as in their discretion may seem fit, certificates of competent skill and knowledge and qualification to exercise the business or calling of Pharmaceutical Chemists, or, as the case may require, to be engaged or employed as Students, Apprentices, or Assistants respectively.

IX. And to enable the said Society to provide for the examination in Scotland of such Students, Apprentices, or Assistants in Scotland as may desire to be examined there, it shall be lawful for the Council of the Society, and they are hereby required, to appoint such fit and proper persons in Scotland, to meet in Edinburgh or Glasgow, or such other place or places as the Council may think desirable, and to conduct there all such examinations as are provided for and contemplated by this Act, with such and the like powers and authorities in respect thereof as are herein conferred, and to grant to the persons to be so examined such and the like certificates as are hereinbefore specified and referred to, or to refuse the same; and all the provisions of this Act shall be equally applicable to the examiners, examinations, and parties examined in Scotland, as to the examiners, examinations and parties examined in England.

X. Every such person who shall have been examined by the persons appointed as aforesaid, and shall have obtained a certificate of qualification from them, shall be entitled to be registered by the registrar according to the provisions of this Act, upon the payment of such fee or fees as shall be fixed by the by-laws; and every such person duly registered as a Pharmaceutical Chemist shall be eligible to be elected as a Member of the said Society;

and every such person duly registered as an Assistant shall be eligible for admission as an Associate of the said Society; and every such person duly registered as a Student or Apprentice to a Pharmaceutical Chemist shall be eligible for admission into the said Society, according to the by-laws thereof.

XI. That no person who is a member of the medical profession, or who is practising under right of a degree of any university, or under a diploma or license of a medical or surgical corporate body, shall be entitled to be registered under this Act; and if any registered Pharmaceutical Chemist shall obtain such diploma or license, his name shall not be retained on the said register during the time that he is engaged in practice as aforesaid.

XII. From and after the passing of this Act, it shall not be lawful for any person, not being duly registered as a Pharmaceutical Chemist according to the provisions of this Act, to assume or use the title of Pharmaceutical Chemist or Pharmaceutist in any part of Great Britain, or to assume, use, or exhibit any name, title, or sign implying that he is registered under this Act, or that he is a member of the said Society; and if any person, not being duly registered under this Act, shall assume or use the title of Pharmaceutical Chemist, or Pharmaceutist, or shall use, assume, or exhibit any name, title, or sign implying that he is a person registered under this Act, or that he is a Member of the said Society, every such person shall be liable to a penalty of five pounds; and such penalty may be recovered by the registrar to be appointed under this Act, in the name and by the authority of the Council of the said Society, in manner following (that is to say,)

In England or Wales, by plaint under the provisions of any Act in force for the more easy recovery of small debts and demands:

In Scotland, by action before the Court of Sessions in ordinary form, or by summary action before the sheriff of the county, or in the royal burghs before the magistrates of the burghs where the offence may be committed or the offender resides, who, upon proof of the offence or offences, either by confession of the party offending, or by the oath or affirmation of one or more credible witnesses, shall convict the offender, and find him liable in the penalty or penalties aforesaid, as also in expenses; and it shall be lawful for the sheriff or magistrate, in pronouncing such judgment for the penalty or penalties and costs, to insert in such judgment a warrant,



in the event of such penalty or penalties and costs not being paid, to levy and recover the amount of the same by pouncing :

Provided always, that it shall be lawful for the sheriff or magistrate, in the event of his dismissing the action and assoilzieing the defender, to find the complainer liable in expenses ; and any judgment so to be pronounced by the sheriff or magistrate in such summary application shall be final and conclusive, and not subject to review, by advocacy, suspension, reduction, or otherwise.

XIII. Provided always, that no action or other proceeding for any offence under this Act shall be brought after the expiration of six months from the commission of such offence ; and in every such action or proceeding, the party who shall prevail shall recover his full cost of suit or of such other proceedings.

XIV. All and every sums and sum of money which shall arise from any conviction and recovery of penalties for offences incurred under this Act, shall be paid as the Commissioners of her Majesty's Treasury shall direct.

XV. If any registrar under this Act shall wilfully make or cause to be made any falsification in any matters relating to any register or certificate aforesaid, every such offender shall be deemed guilty of a misdemeanor.

XVI. If any person shall wilfully procure by any false or fraudulent means a certificate purporting to be a certificate of registration under this Act, or shall fraudulently exhibit a certificate purporting to be a certificate of membership of the Pharmaceutical Society, every such person so offending shall be judged guilty of a misdemeanor.

[We had intended to accompany the publication of the above Act with an account of the steps taken to obtain it, and the proceedings of the Pharmaceutical Society for carrying it into effect ; but time has not rendered it admissible. We hope in a future number to do so from the abundant material in our hands.—EDITOR AMER. JOURN. PHARM.]

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#### ON QUINIDINE.

BY EDWARD N. KENT.

It has been recently asserted by M. Henry that quinidine is merely a hydrate of quinine, or quinine plus 2 atoms of water. This statement has been considered erroneous by other chemists,



but no facts have been elicited which prove it to be so. From my own experiments on this subject, I am induced to believe that the two alkaloids are entirely dissimilar in their chemical composition.

Sulphate of quinine, dissolved in an aqueous solution of chlorine, and a few drops of ammonia added, furnishes a deep green color characteristic of quinine. Sulphate of quinidine treated in the same manner, remains colorless if free from quinine.

Sulphate of quinine, dissolved in acetic acid, a few drops of tincture of iodine added, the mixture heated and allowed to cool, furnishes a beautiful emerald green crystalline compound, called sulphate of iodo-quinine by Dr. Herepath, its discoverer. Sulphate of quinidine, treated in the same manner, furnishes a brown precipitate.

The sulphate of quinine used for the above experiments was prepared by re-crystallizing the commercial salt. The sulphate of quinidine was prepared from a sample of pure quinidine, received from C. Zimmer, Frankfort-on-the-Maine. The first being a di-sulphate, and the second a neutral salt. The reaction with chlorine and ammonia being entirely independent of the acid or water of hydration, this test alone is sufficient to prove that quinidine is not a hydrate of quinine.—*N. Y. Jour. of Pharmacy, May, 1853.*

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#### ON THE PRACTICAL APPLICATION OF TUNGSTEN, MOLYBDENUM, TITANIUM, AND SILICUM, TO ELECTRO-PLATING.

By M. JUNOT.

*Tungsten.*—M. Junot first prepared his tungsten baths with tungstate of ammonia dissolved in a lye of carbonate of soda, with the addition of 200 parts of cyanide of potassium for each 1,000 parts of metallic salt, sufficient water being added to bring the solution to specific gravity 1,050 to 1,055. He obtained equally good results by the employment of sulphites and hypo-sulphites of soda or ammonia. Lastly, however, he has obtained very superior results by the employment of the double cyanides of tungsten and sodium, prepared simultaneously in the following manner: A hot saturated solution of oxide of tungsten in carbonate of soda

lye of specific gravity 1,200, is made and filtered, whilst hot, through an excess of oxide of tungsten. The solution, when cold, is then placed in a Woulfe's apparatus, and saturated with hydrocyanic gas; when the solution has acquired a dark brown color, the operation is finished. The Woulfe's apparatus is then allowed to cool, after which, the double cyanide thus obtained is poured into a lye of carbonate of soda, of specific gravity 1,043, in which 75 parts of cyanide of potassium has previously been dissolved in each 1,000 parts of the concentrated solution of the double cyanide. The whole is then boiled for one hour, and twice carefully filtered. In this condition the bath contains about 15 parts of metal in each 1,000 parts of the solution.

*Molybdenum.*—M. Junot has obtained some very excellent deposits of molybdenum in solutions of phosphate, tartrate and sulphite of soda, also in cyanide of potassium, by employing the red oxide of molybdenum, precipitated by yellow prussiate of potash; but he finds the same kind of bath as that used for tungsten to answer quite as well.

*Titanium.*—M. Junot effects a deposition of titanium by dissolving titanate of potash in boiling sulphuric acid, evaporating the solution to a pasty consistence, and dissolving the mass in a solution of sulphate of soda of specific gravity 1,051 to 1,059. The titanium thus obtained is white, very brilliant, having a slight golden cast when viewed in a certain position.

*Silicium.*—After having drained in a filter the silicious jelly obtained by precipitation from a solution of soluble glass by means of hydrochloric acid, a concentrated solution is made of it in carbonate of soda lye of specific gravity 1,200. The boiling is continued for some time, until there remains an excess of silica, which will not dissolve; the solution is then filtered whilst hot, and allowed to stand for two days. The clear solution is then drawn off from the crystals of soda which are formed at the bottom of the vessel, diluted with five times its volume of distilled water, in which 25 parts of cyanide of potassium for every 1000 have previously been dissolved; the whole is then well boiled and carefully filtered. After several days' rest, this bath works perfectly if a current of electricity be passed through it for one day. The deposit of silicium obtained by the use of this bath is of a buff color, slightly rainbow tinted, and its resisting power is so great

that a spoon which had been immersed in it for but four hours, stood the melting in it of litharge over a charcoal fire; and when the reduced metal was run out, not the slightest spot was perceptible, although the spoon was made of inferior brass.

Tungsten, molybdenum and silicium, alloyed with one another, or separately alloyed with silver, in the proportion of 5 to 100 of silver, give excellent results, communicating to that metal many of their own peculiar properties.—*Annals of Pharmacy*, June, 1853.

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#### ON THE PREPARATION OF CRUDE PELARGONATE OF ETHYL-OXIDE (ESSENCE OF QUINCE.)

By DR. R. WAGNER.

It has been believed, until the most recent period, that the peel of quinces contains *œnanthylate* of ethyl-oxide. New researches, however, have led to the supposition that the odorous principle of quinces is derived from the ether of pelargonic acid. In my last research on the action of nitric acid on oil of rue, I found that besides the fatty acids, which Gerhardt had already discovered, pelargonic acid is formed. This process may be advantageously employed for the preparation of crude pelargonate of ethyl-oxide, which, on account of its extremely agreeable odor, may be applied as a fruit essence equally with those prepared by Dobereiner, Hofmann and Fehling. For the preparation of the liquid, which can be named the essence of quince, oil of rue is treated with double its quantity of very diluted nitric acid, and the mixture heated until it begins to boil. After some time two layers are to be observed in the liquid; the upper one is brownish, and the lower one consists of the products of the oxidation of oil of rue and the excess of nitric acid. The lower layer is freed from the greater part of its nitric acid by evaporation in a chloride of zinc bath. The white flocks frequently found in the acid liquid, which are probably fatty acids, are separated by filtration. The filtrate is mixed with spirit, and long digested in a gentle heat, by which a fluid is formed, which has the agreeable odor of quince in the highest degree, and may be purified by distillation. The spirituous solution of pelargonic ether may also be profitably prepared from oleic acid, according to Gottlieb's method.—*Journal für Praktische Chemie*, and *Annals of Pharmacy*, April, 1853.



## USE OF COFFEE-LEAVES IN SUMATRA.

From the *Overland Singapore Free Press*, published Jan. 3, 1853, we extract the following letter signed "*An old Sumatran*," upon the use of coffee-leaves for the preparation of a beverage in the island of Sumatra. We briefly alluded in the *Pharmaceutical Journal* for June, 1852 (Vol. xi., p. 578,) to a project for employing coffee-leaves in this country as a substitute for tea.

"In the *Singapore Free Press*, of the 17th September last, are extracts from the *Colombo Observer*, by which it appears a patent has been taken out by Dr. Gardner (known to us by his travels in South America\*) for preparing the coffee-leaf in a manner to afford a beverage like tea, that is, by infusion, 'forming an agreeable, refreshing, and nutritive article of diet.'

"It may be interesting to Dr. Gardner, his friends, and the public in general to learn, that an infusion of the coffee-leaf is an article of universal consumption amongst the natives of this part of Sumatra; wherever coffee is grown the leaf has become one of the very few necessities of life which the natives regard as indispensable.

"The coffee plant in a congenial soil and climate exhibits great luxuriance in its foliage, throwing out abundance of suckers and lateral stems, especially when from any cause the main stem is thrown out of the perpendicular, to which it is very liable from its great superincumbent weight compared with the hold of its roots in the ground. The native planters, availing themselves of this propensity, often give the plant a considerable inclination, not only to increase the foliage, but to obtain new fruit-bearing stems when the old ones become unproductive. It is also found desirable to limit the height of the plant by lopping off the top, to increase the produce and facilitate collecting it, and fresh sprouts in abundance are the certain consequence. These are so many causes of the development of a vegetation which becomes injurious to the quantity of the fruit or berry unless removed; and where this super-

\*It is Dr. John Gardner of London who exhibited prepared coffee-leaves at the Great Exhibition of 1851. Mr. George Gardner, late superintendent of the Botanical Garden at Peradenia, Ceylon, and author of *Travels in the Interior of Brazil*, died in Ceylon in March, 1849.—Ed. *Pharm. Journ.*



abundant foliage can be converted into an article of consumption, as hitherto the case in Sumatra, the culture must become the more profitable, and it is clearly the interest of the planters of Ceylon to respond to the call of Dr. Gardner, and by supplying the leaf on reasonable terms, to assist in creating a demand for an article they have in abundance, and which for the want of that demand is of no value to them. It ought to be mentioned also, that the leaves which become ripe and yellow on the tree and fall off in the course of nature, contain the largest portion of extract and make the richest infusion, and I have no doubt, should the coffee-leaf ever come into general use, the ripe leaf will be collected with as much care as the ripe fruit.

“The mode of preparation by the natives is thus:—The ends of the branches and suckers with the leaves on, are taken from the tree and broken into lengths of from twelve to eighteen inches. These are arranged in the split of a stick or small bamboo, side by side, forming a truss in such a manner, that the leaves all appear on one side and the stalks on the other, the object of which is to secure equal roasting, the stalks being thus exposed to the fire together and the leaves together. The slit being tied up in two or three places, and a part of the stick or bamboo left as a handle, the truss is held over a fire without smoke, and kept moving about so as to roast the whole equally without burning, on the success of which operation the quality and flavor of the article much depends. When successfully roasted the raw vegetable taste is entirely dissipated, which is not the case if insufficiently done. When singed or overdone, the extract is destroyed and the aroma lost. When the fire is smoky, the flavor varies with the nature of the smoke. The stalks are roasted equally with the leaves, and are said to add fully as much to the strength of the infusion. By roasting, the whole becomes brittle, and is reduced to a coarse powder by rubbing between the hands. In this state it is ready for use, and the general mode of preparing the beverage is by infusion, as in the case of common tea.

“If the testimony of one who has been long personally accustomed to the use of an infusion of the coffee-leaf thus prepared, can be of any avail in recommending the article to public notice, I freely offer mine in support of all that which Dr. Gardner’s patent claims for it, viz., ‘as forming an agreeable, refreshing, and nutri-

tive article of diet.' While I find the use of infusion of the *berry* for a few days invariably to produce on me, as on many others, the effects of nervousness and bilious obstruction, I drink a strong infusion of the *leaf* daily with evident benefit to my health and strength. As a restorative on exhaustion from the severities of labor or of the weather, from heat to cold, or long exposure to rain, I know nothing superior to it. It has also the advantage of being a powerful disinfectant, so far as neutralizing fœtidity goes, and a solvent of the viscid fluids which obstruct the circulation, often to the extent of becoming laxative if taken in extra quantity. Of its nutritive power, no proof can be stronger than that it suspends hunger and enables the laboring man to pursue his work for hours after he would be otherwise unable. That it would soon become a most valuable article of diet among the laboring classes, and on ship-board particularly, if once brought into use, there can be no doubt. The coffee-tree can be grown to advantage for the leaf in the lowlands of every tropical country where the soil is sufficiently fertile, whilst it requires soil and climate to produce the fruit.

"Nothing appears in the *Free Press* on the mode of its preparation by Dr. Gardner, but I should think if roasted and pulverized and packed in air-tight cases like tea, it would retain its strength and bear transporting to every part of the world; and as it soon fixes itself more strongly than either tea or coffee in the taste, it would soon become a more absolute necessary of life than either of those articles. In fact, I am acquainted with no tropical production capable of being rendered so great a blessing to mankind as the coffee leaf; and as it would tend materially to the desuetude of ardent spirits and strong drinks, its introduction ought to have the support of every friend to the moral and material welfare of society."

*Padung, 12th Nov., 1852.*

*Pharm. Journ., March, 1853.*

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## ON THE STATE OF PHARMACY IN GERMANY AND PRUSSIA.

By M. Bussy.

Among the modifications of the law relating to pharmacy, which have been sought for in a petition addressed to the French government by a great number of pharmacutists, there is one of especial importance, to which all the others are in some sort subordinate.

This is the limitation of the number of Pharmacies and the establishment of a legal tariff for the sale of medicines.

The consideration of this petition was entrusted by M. Dumas, then minister of agriculture and commerce, to a commission consisting of MM. Soubeiran, Boudet, and Bussy, the latter of whom, in order justly to appreciate the advantages and inconvenience of the system desired, has undertaken the examination of its practical working in the several German states where it has existed from time immemorial. On account of the interest of the question which has thus been raised, he has published the result of his inquiry and the opinions he has formed of the different systems which now obtain in France and Germany.

The medical institutions of Germany are for the most part modelled after those of Prussia. In the free towns and small states which do not possess a special Pharmacopœia, that of Prussia is invariably adopted.

This circumstance is owing not merely to the greater territorial importance of Prussia and its political influence over the smaller states, but is in a great measure the result of the especial care which that power bestows upon every subject connected with the public health.

It will, therefore, be convenient to give particular attention to the institutions of that country, the administration and political organization of which, in many respects, closely resemble that of France.

Medical legislation in Prussia is centralized under the management of a single minister, whose supervision extends not only to Medical and Pharmaceutical affairs, but likewise to everything connected with the exercise of these professions, midwives, dentists, veterinarians, and all that relates to public medical institutions. He has under his immediate authority a superior medical council at Berlin, and in each province a government medical adviser charged with the administration of all medical affairs.

Besides the government medical advisers there are other functionaries, who, under the titles of "physicus" and "kreis-physicus," are charged with the surveillance of medical affairs in towns and districts, and all the details relative to the execution of the special laws and regulations of the medical professions. Questions of a purely scientific nature are submitted at Berlin to



a kind of medical board, appointed by the minister. In this board all the medical sciences are represented, and it is presided over by a superior medical functionary.

Similar boards, under the name of medical colleges, are located in the principal towns of each province in the kingdom. The members of these colleges are charged with the examination of surgeons, sanitary officers, and midwives. They are, moreover, called upon to give their advice in all difficult cases of medical and chemical jurisprudence, as well as in all instances where the local authorities consider it necessary to have recourse to their guidance. The higher administrative body is thus made perfectly familiar with all the facts which it is necessary they should be acquainted with, and upon which they may be called upon to give a decision. It will readily be understood how much this system of centralization tends to facilitate the better co-ordination of medical services by the administration, and what a much greater power it gives them of introducing such modifications or improvements as may be considered necessary or practicable. Such then is the general character of the medical organization in Prussia; and it will now be necessary to see in what manner the practical application of the system is carried out with regard to matters particularly connected with pharmacy.

#### CONDITIONS OF THE EXERCISE OF PHARMACY IN PRUSSIA.

In Prussia and in the several German states it is necessary, in order to exercise the profession of a pharmacist, to possess the following qualifications:

1. An adequate education proved by preliminary studies and special examinations.
2. An authority to open a shop, or to undertake the management of one already established.

#### STUDIES AND RECEPTION OF PHARMACEUTICAL CANDIDATES.

A young man who is desirous of entering a pharmacy for the purpose of learning the business, must but be at least 14 years of age. He must have a sufficient knowledge of Latin to be able to translate the *Pharmacopœia* at sight; and further, he must be acquainted with the first elements of the physical and natural sciences. He shows that he is possessed of these qualifications by an examination, which is made by the "physicus" of the district.



The "physicus" gives the candidate, who passes, a certificate stating that he has conformed to the usual regulations; he is then considered capable of entering a pharmacy, and receives from the certificate the authority to do so. The prescribed period of study as an élève is four years; but this period may be shortened six months by special permission from the pharmaceutist, when the élève has distinguished himself by aptitude and industry. At the end of this time he undergoes another examination by the "physicus" and the pharmaceutist with whom he has studied. On passing the examination he receives a second certificate, stating that he possesses the requisite knowledge and is capable of being employed as a "commis." Before he can present himself for examination to be admitted as a pharmaceutist, he must have served during five years as a "commis." The system of education of élèves in Germany differs therefore in some respects from that which is adopted in France. The preliminary examination which they undergo by the "physicus" is very advantageously replaced in France by the diploma of "bachelier ès sciences," required of pharmaceutical élèves.

However, while the French law recognizes only one class of pharmaceutical students, the Prussian law wisely makes a distinction of two classes—the one comprising those who are passing through what is elsewhere called the apprenticeship, and the other including the "commis," who, properly speaking, correspond to the "élèves en pharmacie" in France.

Upon this distinction, which is extremely appropriate, depends in a far greater measure than might be supposed, the good management of the business; it involves a difference in the respective duties of the principals and the élèves, the maintenance of which is highly important. Thus a pharmaceutist may have an unlimited number of "commis," but the number of apprentices is limited, and must always be less than the former; he is bound to provide the apprentices with the necessary facilities for pursuing their studies and to assist them with his advice and instruction. It would certainly be advisable to resume in some respects this system in France; it would be advantageous to re-establish the distinction inappropriately abolished between the élève who is commencing his studies, and whose intervention in the actual business of the pharmacy may be hazardous, at least when not

scrupulously watched, and the élève who has already had more than four years' practice, to whom may be intrusted a great number of operations, and, in case of necessity, even the superintendence of the business during any temporary absence of the principal.

In fact, pharmacutists draw a marked distinction between their élèves; and although this distinction is not authorized by law, it would be very advantageous if it were.

Under the general denomination of élèves, a pharmacist may have only such apprentices as are entirely ignorant; and if in case of momentary absence he were to entrust the business to one of them, great inconvenience might result. It is therefore requisite that the government should establish a legal distinction between the élèves—between those who, on account of their want of experience, are unable to carry out any operations except under the immediate superintendence of the principal, and those who are sufficiently instructed to be capable of assisting, or, in case of necessity, replacing him. The latter might with justice assume the title of “aides en pharmacie,” leaving to the former the denomination of élèves. Such a measure would be conformable with the true state of things, and would at the same time establish a better internal organization of pharmacies, rendering them more easy of management and of greater service to the public.

In Prussia, as in France, the pharmaceutical candidates are not strictly compelled to pass through a course of study at a university before presenting themselves for examination; but in both countries the necessity has been felt of altering this state of things, and making theoretical studies obligatory, long experience having demonstrated that candidates who have not passed through a regular course of study are altogether incapable of undergoing examination with any chance of success.

The Prussian law requires that the candidates shall have had nine years of practical experience, that is, four years as élève (apprentice) and five years as commis (assistant; ) but this term of nine years can be abridged in the case of those élèves who have attended a university course.

There are not in Germany, as there are in France, any special schools of pharmacy; the pharmaceutical élèves, like the students of medicine, law, and others, are educated at the universities, where they are taught in a general manner without any reference

to practical applications. Such a combination of all the sciences in one institution certainly possesses very great advantages, especially for small states. They are thus enabled, by concentrating all their means upon one establishment, to provide students with the means of obtaining a general education of an elevated and far more complete character than could be done if the different educational establishments were distributed among several cities. But these universities, useful in certain respects, where law, theology, natural science, mathematics, &c., are taught, are incapable of replacing with advantage the institutions for professional instruction, organized in a special manner in France, under the names of the Faculty of Medicine, School of Pharmacy, School of Mines, &c., where the sciences are taught with a direct view to their applications. Taking, for the sake of example, only one science—taught in three schools of which mention has been made—chemistry, it will readily be understood, that it is presented in each of them under very different points of view, and that the general course adopted for the mixed audience of a university, comprising students of pharmacy, medicine, agriculture, and mining, would not fully supply the wants of any one of these classes of students. Nevertheless, it would be unjust not to acknowledge, that with regard to chemistry in particular, it is studied in Germany with very great care, and with considerable advantage to the students.

The course of study which they are required to follow at the University of Berlin, in the place of a part of their practical studies, comprises botany, physics, chemistry, and pharmacology, natural history, and chemical analysis. The student pays the professor one or two louis for the course of each session, and in return for this he is admitted to work in the laboratory of the professors of chemistry, where he acquires a knowledge of analysis. The same regulations are observed in the other universities of Germany.

When a candidate is desirous of being received as a pharmacist, he addresses to the competent authority—the minister of public instruction, &c.—a request to that effect, which must be accompanied by documents proving the length of time during which he has studied. If these documents are satisfactory, the candidate receives from the minister an authorisation, in which he is reminded of the different conditions with which he will have to comply.



This authority having been obtained, it is addressed to the director of the university, whose business it is to convoke a board of examiners. This board is composed of eight members, who at the present time are Mitscherlich, Professor of Chemistry; Rose, Prof. of Chemical Analysis; Bran, Professor of Botany; Magnus, Prof. of Physics; Kluge, Professor of Zoology; Berg, Stabero, and Wittstock.

The examination is extended, stringent, and varied.

The first part, under the name of the "tentamen," is a kind of preliminary test, and relates to three subjects, mineralogy, botany, and toxicology, of which the candidate is obliged to treat in writing.

The second part consists in the preparation of a certain number of galenical substances under the superintendence of a member of the board.

The third part consists in the preparation of three chemical products, properly so called, and used in pharmacy, such, for instance, as acetic acid, iodide of potassium, and emetic tartar.

The fourth part is the chemical analysis of some mixture of mineral substances, of which the following is an example:—Oxide of mercury, oxide of zinc, oxide of magnesium, oxide of calcium, phosphate of lime.

These substances must be determined both qualitatively and quantitatively. The examiners previously fix the limits of error within which the results of the candidates must fall on pain of being rejected and having to recommence their examination.

The fifth part of the examination is likewise an analytical operation; the candidate must determine the nature and quantity of some poisonous substance mixed with a medicinal or alimentary compound. The following examples, taken from records of the board of examiners, will give an idea of the kind of analyses and the difficulties which they present:—1. Emulsion of almonds, six ozs.; corrosive sublimate, ten grs.; white oxide of antimony, ten grs. 2. Café au lait, six ozs.; arsenious acid, six grs.; sulphuret of cadmium, ten grs. 3. Protochloride of mercury, ten grs.; nitrate of silver, ten grs.; liquorice, sufficient to make 100 pills of 4 grs. each.

The recognition of drugs is the object of the sixth part of the examination; and among other things, the candidate is required to



tell the names of and describe six dried plants taken at random from an herbarium containing officinal and medicinal plants.

The seventh part of the examination, and the one to which great importance is attached, is a written composition. This is a work of erudition, usually very extended, upon some given subject connected with chemistry, and capable of considerable development, as for instance the history of cyanogen. The author is allowed as much time as he may require for the completion of his treatise; books as well as all other requisites are placed at his disposal, and he is merely required to state from what source he has derived his information. He thus gives a kind of complete treatise upon the subject, and in so far is obliged to introduce into it whatever degree of learning or personal experience he may possess. He is likewise required to prefix to his treatise a *résumé* of his entire career as a student of pharmacy and science (*curriculum vitæ*,) containing a statement of every circumstance which may interest in his favor either the examiners or the administration.

The treatise, strictly speaking, ought to remain in the hands of the minister, in order that it may be referred to under any circumstances which may affect the pharmacist who is its author. Thus, if he makes application for any privilege or other favor which it is in the power of the government to confer, this document is always consulted before a reply is made to his application; it is a "concours" which is in some sort permanent among the pharmacutists of the country, and which places the government in a position of being always acquainted with the former merit and claims of each individual.

In the eighth stage of the examination, the above-mentioned treatise is submitted to the test of public discussion, in which the examiners take part. At the same sitting, which terminates the examination, the candidate is or may be interrogated on all branches of science connected with pharmaceutical studies. This part of the examination is public, the rest takes place in the presence only of three members of the board of examination.

When the candidate does not perfectly satisfy the examiners in any part of the above examination, he is required to present himself again after a certain time determined by the examiners; when, on the contrary, he is found to possess the necessary qualification, he is admitted without delay, and receives his diploma at the close of the examination.

The board at Berlin examines candidates from all parts of the kingdom; besides it, there are similar boards in the chief towns of each province, taken from the medical colleges, who likewise admit pharmaceutical candidates by examination, although only those of the second class, whose privileges are very limited.

The examination by these deputy boards is nominally the same as that at Berlin, but is really much less severe. The manipulations are conducted in the shop of one of the examiners, and never present the difficulties and importance of those required by the board at Berlin. The entire examination does not occupy more than three sittings.

The admission of pharmaceutists in Prussia, as may be inferred from the above, is an extremely serious transaction. The written treatise, which is not required in any of the examinations in France, is a very requisite and trustworthy test; the most timid candidate, however little used to speaking in public, may, by this means, furnish a certain indication of the extent of his knowledge, without his attention being distracted by any external circumstances, and leaves the examiner perfectly at liberty to be strict without fearing to be unjust, by attributing to deficient knowledge any hesitation or error which may be solely owing to momentary confusion or nervousness. The chemical and toxicological analyses are likewise tests whose introduction into the examination is indispensably necessary. The candidate may indeed have given very satisfactory answers on chemistry, but his theoretical knowledge will remain useless in the exercise of his profession—it will be of no service either to himself or to the public, unless based upon a sound practical experience. It is necessary not only that he should know processes, but likewise that he should know how to conduct them practically.

Under the pressure of this necessity of undergoing a practical examination, a great number of the pharmaceutists of Germany have, by their studies in the laboratories of Giessen, Berlin, and Weisbaden, become very dexterous manipulators, who may safely be consulted by the judicial authorities in any cases of medical jurisprudence; and to whom manufacturers and agriculturists are in the constant habit of referring for scientific assistance.

#### THE TWO CLASSES OF PHARMACEUTISTS IN PRUSSIA.

In most of the German states there is only one class of phar-

maceutists, but in Prussia there are two ; those who are admitted by the examiners at Berlin ; and those who are admitted by the provincial examiners. The latter correspond, with regard to their modes of admission, to the pharmaceutists admitted in France by the "*jurys medicaux*," but in Prussia they possess but very limited privileges ; they are fewer in number, are not held in any estimation in a professional point of view, they cannot be consulted by the judicial authorities in cases of chemical or toxicological jurisprudence, and they are only permitted to establish themselves in neighborhoods where the population is very small ; they are, in fact, altogether in a position of marked inferiority to the other class of pharmaceutists, who are at liberty to establish themselves anywhere. The law does not strictly determine the amount of population of the towns in which pharmaceutists of the second class may establish themselves, but in practice this circumstance is not found to involve any difficulty, for the Government always gives the preference to pharmaceutists of the first class. Consequently, whenever there is a competition for the establishment of a Pharmacy, or for the management of one already existing, permission is not granted to a pharmaceutist of the second class, if it is at the same time applied for by one of the first class. By this means there is never any want of qualified pharmaceutists suitable to the requirement of the population of a locality, and when it is necessary to make a choice among competitors the permission is always granted to the most worthy.

This system is by far more rational than that which prevails in France, where the pharmaceutists admitted by the *jurys* are at liberty to commence business in any town they please, with the exception of Paris, Montpellier, and Strasburg. The consequence is, they establish themselves in the large towns, together with pharmaceutists of the first class, while in the smaller places there are none at all. It would certainly be very desirable if there were in France, as in all other countries, but one class of pharmaceutists, so that the poor, as well as the more wealthy population, the inhabitants of the country places, as well as those of towns, might have their wants supplied by men of equally good education. But if, on the other hand, the inferior order of pharmaceutists are tolerated, upon the ground that such a course is to the interest of those inhabiting small towns or villages, and alone secures to them



a supply of medicaments in case of necessity, it must be allowed that this object is altogether frustrated, by granting them permission to establish themselves in large towns, or in any place where pharmacutists of the first class should settle.

It would therefore be just, and at the same time advantageous to the country, if, as in Prussia, the preference was always given to those who can present the greatest guarantee of capacity, and if pharmacutists of the second class were permitted to establish themselves only where the number of those of the first class was inadequate to the requirements of the population.—*Pharm. Jour.*, May 1, 1853, from *Journ. de Pharm.*

(To be continued.)

## NOTES UPON THE DRUGS OBSERVED AT ADEN, ARABIA.

By JAMES VAUGHAN, Esq.

Member of the Royal College of Surgeons of England, Assistant Surgeon in the Bombay Army,  
Civil and Port Surgeon at Aden, Arabia.

*Communicated by Daniel Hanbury.*

(Concluded from page 234.)

**COPAL.**—This substance is brought from the coast opposite the island of Zanzibar and is said to be dug up from the earth, where it lies in irregular flakes.

The mines, if they may be so called, are worked by Seedees exclusively for the Imaum of Muscat, who is also the ruler of Zanzibar, and claims the produce as his private property. I have heard that in the same latitude (or nearly so) on the western coast of Africa, somewhere in the region of Congo, similar beds of this substance are found and worked by the Portuguese.

**SANGUIS DRACONIS**, or Dragon's Blood, is known in Southern Arabia and Socotra, as also among the Somalis, by the name of *Dam-oolakhawein*, i. e., *the blood of the two brothers*. In the island of Socotra the tree affording it grows in luxuriant abundance together with the plant yielding aloes. It is likewise to be found in Hadramaut and on the east coast of Africa, though but little of the drug is exported from the latter places, the natives being either ignorant of its uses and value, or too supine and lazy to collect it.

Dragon's blood, aloes, orchella weed and ghee, or liquid butter, are the principal and almost the only exports from Socotra. These are generally taken by the *baggalas* and native vessels which



arrive there annually from the Persian Gulf about the month of February, after having touched at the principal towns on the coast of Southern Arabia, bringing with them dates (which are the staple commodity,) small parcels of cloth, rice, sugar and iron, all which they barter for the native produce. The boats next proceed to Zanzibar where they dispose of the articles obtained at Socotra and which are thence transhipped for the Indian markets; they then return laden with grain and other merchandize about the month of April, revisiting for the usual barter trade several of the towns on the Arabian coast, and reaching the Gulf about the end of May.

A naval officer of great experience informs me, that whilst at anchor in the Muscat roads, between the 21st November and 10th December, 1835, he calculated from the number of native vessels which passed that port sailing westward and varying in size from 50 to 252 tons, that the freight of dates amounted to at least 12,880 tons. This fact alone indicates that an extensive commerce is kept up between the Persian Gulf, Southern Arabia, Socotra and Zanzibar.

Hitherto very little Dragon's blood has been imported into the Aden market, but as has already been remarked with regard to other drugs common in this region, the demand only seems wanting to call forth a plentiful supply.\*

DUGGA-BOOT or DAGABOOT, a medicinal root growing on the Somali coast. The natives of that part of Africa make use of it in nearly every ailment but especially for pain in the bowels, anorexia, and debility after fevers. From this I imagine it is an alterative tonic, but beyond this crude information I am unaware what the beneficial properties of the root are.†

\* Lieut. Wellstead speaks of having observed *Dragon's Blood* produced in Southern Arabia as well as in Socotra. The tree affording it he states to be *Dracæna draco*, and from his description it would appear likely that such is the case. See *Travels in Arabia*, by Lieut. J. R. Wellstead, F. R. S., Lond., 8vo, 1838, vol. ii., p. 449. Mr. Vaughan's specimen of *Socotrine Dragon's Blood* I have not yet had the privilege of examining.—D. H.

† Mr. Vaughan has alluded to this drug in the *Lancet*, Jan. 10, 1852, p. 41. A specimen of it with which he has favored me, consists of straight, hard, wiry sticks, six to eighteen inches in length, and varying in thickness from that of packthread to that of a quill; externally covered with a thin reddish brown bark, internally whitish. The drug has but little taste or smell.—D. H.

KORARIMA CARDAMOM (Pereira\*), *Kheil* or *Khil* of the Arabs. The fruit is met with in the market of Mussowah, whence I have obtained through a naval friend a considerable quantity as a specimen. Each fruit has been perforated, probably for the purpose of suspension on a cord while being dried. The drug could be procured in abundance were there a demand for it in commerce.†

WURRUS or WARAS, a red powder used chiefly as a dye, is the produce of a plant resembling the Sesame. I am informed, that the plant rises to about five feet in height, bearing separate bunches or clusters of small round seeds, which are covered with a description of pollen or flour; this, removed from the seed-clusters by gentle rubbing or shaking, constitutes the dye; the seeds are afterwards thrown away. Two kinds of *wurrus* are brought into this market. The best comes from the interior, principally from the towns of O Badan and Gebla and the districts of Yaffae and Sjibul Rudfan. A second kind, brought by the Somalis of the opposite coast, comes from the neighborhood of Hurrer; this is not so much valued and does not realize the price of the other sort. A considerable quantity of the dye I find is exported to Bombay; it is used principally by the people of Surat for the purpose of imparting a light brown yellow color to their silks, which are much prized and worn by the native ladies. I believe that *wurrus* is used for silks only, and not for cotton or woollen stuffs. Besides being employed by the Arabs of this part as a dye, the color produced being highly esteemed, they use it likewise as an internal medicine in cases of leprosy, and externally in solution as a lotion to remove freckles and pustules. Much of this dye finds its way to the Persian Gulf, where it is known under the name of *Asberg*. *Wurrus* sells in Aden for about twenty-four *rupees* the *maund*, but the African or inferior description realizes only from seventeen to eighteen *rupees* the *maund*.‡

\* *Elements of Materia Medica and Therapeutics*, vol. ii., p. 1136 (edition 1850)

† I am indebted to Mr. Vaughan for an abundant and fine specimen of this rare cardamom.—D. H.

‡ *Wurrus*, of which two samples have been received from Mr. Vaughan, consists of a dull red, granular, sand-like powder, mixed with small fragments of stalk, leaves, &c.

I presume it to be the *Uars* of Niebuhr, which he speaks of as "*herbe qui teint en jaune et dont on transporte quantité de Mokha dans l'Oman*;" vide *Description de l'Arabie, Amsterdam et Utrecht, 1774*, 4to. p. 133.—D. H.

ORCHELLA WEED, called *Shenneh*, is abundant in this part of the world. There is any quantity of it on the Somali coast, but of an inferior quality to that collected in Aden and in the neighborhood of Mocha. Latterly the Somalis have brought a quantity for sale, but as yet there are but few purchasers.\*

CIVET.—Two kinds of civet, known by the respective names of *Zanzibar* or *Sowhale Civet*, and *Mussowah* or *Abyssinian Civet*, are found in the Aden bazaar. A considerable quantity of this highly-scented perfume is annually brought into Aden for sale, there being a constant demand for it by the Arabs of the interior, who greatly esteem it. It is principally employed by the females, who consider it the height of politeness and gentility to be strongly perfumed with it, especially on great occasions and when going into company, so that the odor to the olfactory nerves of an European is often far stronger than what would be agreeable. The men put a small quantity in their turbans, only, and as a rule on no other part of their dress. Very little civet is exported, I believe, from this place by sea, nearly the whole being sent inland or used by the Arabs in Aden.

I find it is no uncommon custom for the natives of India who are in the habit of retailing this scent to adulterate it to a considerable extent with rosin and with the pulp of the plantain. The *Zanzibar* or *Sowhale civet* sells here for  $1\frac{3}{4}$  dollars per ounce, and the *Mussowah* or *Abyssinian civet* for about one dollar per ounce. Civet is brought for sale in large buffalo horns each containing from one to two pounds of the perfume.

AMBERGRIS.—Small quantities of this substance are collected on the Arabian coast and brought to Aden, where it sells for 95 rupees the pound. I am not aware that it is used medicinally by the Arabs of this district, but it frequently forms an ingredient in the aphrodisiacs employed by the Turks.

SUMN EL BAAR, *Fat of the Sea*.—A colorless substance, emitting

\* Samples of Orchella weed of three qualities have been forwarded to England by Mr. Vaughan, viz.:

1. *Shenneh from Socotra, first quality*. This consists of *Rocella fuciformis*, De Cand.

2. *Shenneh from Socotra, second quality*, consists of *Rocella tinctoria*, De Cand., *Rocella fuciformis* and (?) *Parmelia perlata*.

3. *Orchella collected in Aden*, consisting entirely of *Rocella fuciformis*. An orchill manufacturer who has examined it, finds it to afford a fair amount of coloring matter.—D. H.



a very powerful and offensive odor, which is frequently brought into Aden in large masses, sometimes of the weight of twenty pounds. It is found on the beach or floating on the sea all along this coast. To all appearance it is the produce of a cetaceous animal, most probably of a whale or a dolphin, of which it seems to be a portion of the blubber whence a great part of the oily matter has oozed out. The specimens which I have examined consisted chiefly of fibro-cellular tissue enclosing but a small quantity of spermaceti. The Arabs use it, when melted over a slow fire, as an unguent, and consider it almost in the light of a specific in rheumatic affections.

PEARL-ASH.—An impure carbonate of potash in large dark or black circular cakes is brought into the Aden market every day, and extensively used in washing clothes, &c., being much cheaper than soap, and because it saves the native *dhobies*\* the expenditure of what a laundress at home calls “elbow-grease,” a species of manipulation to which they are much averse. The wood affording this alkali grows in the immediate neighborhood of Aden, and the process of combustion is constantly going on along the northern shore of the harbor. I find the Aden washermen pay about two rupees for each cake.

The foregoing sketch, imperfect as the writer knows it to be, affords, nevertheless, ample proof that this region abounds in numerous vegetable productions, which are profitable as articles of trade, and valuable in their medicinal and other uses. With some of these the commercial and scientific world are already acquainted, with others they are less familiar, and of a few it may be presumed that they know scarcely anything. With regard to science, and especially medicine, it is much to be regretted that some eminent botanist does not turn his attention to this part of the world, where Nature has been so lavish in her precious gifts, and where a wide field of research is open to him, from which he might make many important and original additions to the present stock of medical knowledge, and thereby establish a high claim to the esteem and gratitude of his profession in particular, and of the scientific part of the community generally. Scarcely anything is known at present of Eastern Africa beyond the sea-board, and the

\* *Dhobies*, Indian washermen.



same remark applies to Southern Arabia. What little is reported of the former country goes to support the anticipation, that it is rich, not only in such productions as coffee, cardamoms, gum arabic, gum mastic, myrrh, frankincense, manna, orchella, saffron, safflower, and other familiar drugs, such as have been enumerated in the foregoing paper; but also in a variety of shrubs, plants, and flowers, possessing properties which eventually might prove a great blessing to mankind. And with regard to Southern Arabia, famous even in the early ages of the world for its valuable vegetable produce, it appears almost unaccountable that this country should be well nigh as little known to us as it was to the learned in the days of the ancient Greeks and Romans.

Science may justly be styled the handmaid of trade, and in proportion as general information and civilization extend in this part, will trade increase and thrive. On the other hand, trade is already opening the road for researches such as I have recommended, and a traveller may now make his way with comparative ease to places which, a few years ago, would have been pronounced incapable of access to the European.

Since Aden was declared a free port, the concourse of natives here from the opposite shores of Africa and from the sea-coast of Southern Arabia, has considerably augmented,—a satisfactory proof that trade is on the increase; and I am persuaded that, under judicious management, Aden bids fair to become the great mart of this part of the world. As these visitors and strangers learn more of our habits, and begin to apprehend that their own interests are in a measure bound up with ours, they will gradually lose their jealousy, and eventually become our guides to the homes which they inhabit. This nearer approach to us increases year after year, and the hope may be reasonably entertained, that the present generation of Somalis and Arabs who frequent Aden will not have passed away, before the skill and energy of Europeans shall have availed of this favorable feature to penetrate into their country and to explore its now hidden resources and treasures.

With regard to the general commerce of this region, I trust that the time is not distant, when British merchants will deem it worth while to inquire what prospects it holds out for successful speculation. America and France are before them in the field, and although I cannot assert how far their efforts have been prosperous,

yet the simple fact that they are able to carry on business here, and the other point which I have already stated regarding the increase of trade generally in these parts, may justly be regarded as sufficient criteria to warrant attention being called to the subject.

If the foregoing remarks shall in any degree tend to awaken interest, either in the lovers of science or in the mercantile community, and thus pave the way to the acquisition of the least benefit, the imperfect attempt of the writer will be more than compensated.—*Pharm. Journ.* Feb. 1, 1853.

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ON THE TESTS FOR THE CINCHONA-ALKALOIDS, KINOVIC ACID, KINIC ACID, AND OXIDIZED TANNIN (CINCHONA RED,) IN CINCHONA BARKS.

BY DR. F. L. WINCKLER.

Of all long-known drugs none have in recent times so much engaged the attention of Chemists as cinchona bark—the discovery of the various alkaloids contained in it having afforded a safe standard for the determination of its goodness.

This circumstance has been accompanied by a large number of results, which are of great importance in medical practice. It has removed the uncertainty of the notion of genuine and spurious barks, and made it possible to distinguish the former from the latter, and to determine their real value.

The excellent work of Von Bergen forms the foundation of our knowledge of the cinchona barks. Its theoretical part contains everything that could be obtained at the time of its appearance; but Von Bergen's account of the mercantile relations of this drug is of greater value, because nothing certain was known on this point before, and because for the medicinal use of barks an accurate knowledge of the material imported is certainly of greater importance than the origin of the barks. Notwithstanding all our present information, a long time must elapse before we can accurately arrange the barks imported into Europe, because in consequence of the greatly increased consumption, for the purpose of obtaining the alkaloids, new sources are rendered necessary, and new districts in the native country are explored, by which, doubtless, new species of cinchona are discovered.

The correctness of this view is shown by the present occurrence

of a considerable number of barks which were hitherto unknown; as for example, the barks containing quinidine and paricine, and the numerous sorts of the so-called yellow barks; and it may without hesitation be asserted that these barks contain also a larger number of alkaloids than is known at present.

I have read with much interest Weddell's excellent work, from which Dr. Riegel some time since extracted (see *Pharmaceutical Journal*, vol. ix., p. 224) the information which is of most importance to the Pharmaceutist. Although I am far from undervaluing the high merits of this distinguished traveller, the successor of Humboldt and Poppig, I am, notwithstanding, of opinion that too great importance must not be attached to his researches. I consider that his proposal to determine the goodness of barks by their anatomical structure, has no greater value than as an application to botany generally, and to vegetable physiology in particular, for I have convinced myself by numerous and most carefully performed experiments, that his assertion, that the shortly fibrous barks contain the largest proportion of alkaloid cannot be admitted, as its truth has been directly disproved. It is only applicable to calisaya bark, and even in that case has many exceptions. Were this alone sufficient to raise doubts about the possibility of judging of the goodness of barks by their structure, there is also another circumstance to be taken into consideration. The anatomical structure of bark is, as is well known, uninterruptedly progressive during vegetation: each stage offers a new formation, the bark of the trunk appears very different from that of the larger branches, and that of these varies again in its structure from the bark of the smaller branches. Lastly, we ought to examine the barks as Weddell did, in their fresh condition, in order to be enabled to judge of their structure. These views of Weddell's, however interesting they may be in other respects, are, I am convinced of a very subordinate value for medical practice. We must, therefore, still follow the chemico-analytical route, if we wish to establish a scientific and safe classification of the cinchona barks.

Dr. Riegel was no doubt of the same opinion, when he appended to his extract from Weddell's work a synopsis of all the known methods of determining the proportion of alkaloids; and I am much surprised how he, under these circumstances, could express some doubts whether my experiments perfectly agreed with Weddell's



statements about the origin of the barks, which was scarcely possible. All my experiments refer only to commercial barks, by the names under which they occur in commerce, and I have described their physical characters. Weddell, on the other hand, had quite another object in view, namely, the origin of the barks; and he made no comparative chemical investigations of them. Nevertheless, he, like his predecessors, has left us in uncertainty about the origin of many commercial barks; for I can never persuade myself that Loxa bark and the woody Carthagena bark are derived from the same mother-plant, *Cinchona condaminea*; and every one who knows and has chemically examined both barks, will perfectly agree with me.

We ought, therefore, while fully acknowledging Weddell's merits, not to overlook the difficulties of the subject. It would be unjust to expect that a traveller struggling with hardships of every kind should perform chemical experiments on the spot. This would be contrary to the purpose of so great an undertaking.

My object has hitherto been to arrange the commercial barks according to the specific proportion of alkaloid which they contain, as I have already done, in a small treatise.

There is indeed nothing that could materially obstruct such an arrangement, especially as by the discovery of the kinates we are enabled easily to distinguish similar spurious barks from genuine ones, whilst every uncertainty may be removed by one single experiment. Discrepancies like that which Reigel has noticed with regard to the chemical constitution of Pitaya or bicolorata bark, depend on the mistaking of one bark for another, which frequently arises from the employment of erroneous names. The bark which Peretti examined as *Cinchona bicolorata*, cannot be identical with that whose alkaloid richness, Muratori determined. According to Peretti, and his experiments agree with mine, the bark which he examined contained a peculiar, amorphous, uncrystallizable alkaloid (Peretti's *Pittayin*) and is *decidedly no cinchona*.

As regards the testing of cinchona barks for the alkaloids, no notice has hitherto been taken of the proportion of kinovic acid, but as the very bitter taste of the spurious cinchona barks depends exclusively on this acid, and in some of the genuine barks kinovic acid is found, a mistake may be easily made by the taste. I have



for several years past, devised and employed a method by which not only the proportion of the alkaloid, but also that of the kinovic acid may be quantitatively and qualitatively determined, whilst at the same time the proportion of both kinic acid and oxidized tannin (cinchona red) is indicated. So that all those constituents of the bark, which are of importance for medical practice, are determined.

The barks tested by this method, yield, when employed for the manufacture of the alkaloid on a large scale, exactly the same quantity which they yield by the experiment, generally one-eighth to one-quarter per cent. more, the loss in working with large quantities being naturally less in proportion, and this indeed is the best proof of the efficiency of this method.

In the qualitative examination of cinchona barks, a number of tests have hitherto been employed, which have not only [not] aided this examination, but have rendered it much more difficult.

The efficacy of the bark depends, as is well known, chiefly on the proportion of alkaloid, and of that of pure and oxidized cinchona-tannin. Of the kinovic acid, we only know that it does not act as a febrifuge. The medicinal virtues of kinic acid or kinate of lime have not yet been determined. We must, therefore, confine ourselves to the application of those tests by means of which these compounds can be detected in an infusion of bark, and their quantitative proportion at least approximatively determined. These are, as has been before stated in my monograph on genuine barks, as follows:—

1. *Tannin*, for detecting the alkaloids. The more abundant the precipitate produced by this reagent in the aqueous filtered infusion, the more alkaloid do the barks contain.

2. *Chloride of iron* determines the proportion of oxidized tannin by the more or less intensely dark-grey coloration, which speedily becomes brown, and by the subsequent more or less abundant pulverulent precipitate of a dark, dirty, brownish-green color.

3. *Gelatine (solution of isinglass)*, like chloride of iron, occasions the oxidized tannin to be precipitated. In the liquid filtered from the magma, the proportion of non-oxidized cinchona-tannin may be determined by iodic acid. The latter oxidizes the tannin, and causes the precipitation of a yellowish brown

powder; the mixture soon smells of iodine. The quantities of these two precipitates show the proportion of oxidized and of pure cinchona-tannin.

4. *Sulphate of copper* is perfectly indifferent to the aqueous infusion of bark, which contains no kinovic acid, but indicates the smallest proportion of this acid by a dirtyish green coloration of the mixture, which is speedily followed by a similarly colored fine powder, which is easily separated by the filter, and, after being washed, is distinctly recognized by its very bitter and metallic taste, as kinovate of copper. The more abundant this precipitate, the greater is the proportion of kinovic acid. All other reagents hitherto employed can be absolutely dispensed with.

Of all the hitherto known methods for the quantitative determination of alkaloids, I prefer the following:—If the quantity of bark at command be large, it is necessary, in the first place, to ascertain whether it consist of one or of several sorts. An experienced eye can readily determine this. The several sorts should be separated, and, for experiment, not too small a quantity selected from the entire mass of the coated and uncoated of the coarser and finer barks, taking of each sort according to the various dimensions in which it is contained in the whole mass, about an equal weight. These pieces are to be finely powdered and the residue mixed with the powder. Of this powder 500 grs. or 1000 grs. are to be completely exhausted by digestion in the water-bath, with the necessary quantity of alcohol of eighty per cent. (I use six ounces of alcohol for 1000 grs. bark;) the cold tincture is to be strained through a thin but close piece of linen, the residue washed with alcohol and again digested, and completely exhausted with half the weight of the first employed quantity of alcohol. The residue which is now obtained is to be once more exhausted by alcohol, then dried and preserved. (There is no occasion to spare the alcohol in this process, as the greater portion of it is recovered.) The united alcoholic tinctures are to be filtered and digested at the common temperature, with a mixture of equal parts by weight of recently prepared slacked lime and of crude well-burnt animal charcoal, of which in general half the weight of the employed bark is required. The mixture is to be frequently shaken, and the digestion continued until the

supernatant liquid becomes perfectly decolorized. In the case of most of the genuine barks, this takes place in a short time; but the alcoholic tinctures of the spurious barks, which contain kinovic acid, as well as those which contain paricin, are very imperfectly decolorized by this process, a circumstance which serves to distinguish the paricin barks and spurious barks from the genuine ones.

The decolorized liquid is now to be removed from the residue, and the latter repeatedly shaken with small quantities of alcohol washed on the filter with spirit of wine and dried. From the mixed filtered alcoholic tinctures the greater portion of the alcohol can be recovered by distillation in the water-bath. Beindorff's distillatory apparatus with Liebig's refrigerator is well adapted for this purpose—a similar and much cheaper apparatus can be constructed of tin. The whole quantity of alkaloid which was contained in the bark is now in the residue, and, if the bark contained kinovic acid, in combination with the latter, and a peculiar fatty substance. Small proportions of oxidized tannin are frequently mechanically mixed with it. In order to purify the alkaloid of the latter and to remove the kinovic acid and fatty matter, the residue is to be placed in a small evaporating basin, the distilling vessel is to be washed with a small quantity of water, slightly acidulated with sulphuric acid, and the solution added to the residue. A small excess of diluted sulphuric acid is to be dropped into this mixture, which is to be heated, and when it again becomes cold is to be filtered, and by this means the precipitated kinovic acid and fatty matter are removed and washed with distilled water. From the filtered acid solution the alkaloid is to be thrown down by a slight excess of ammonia; and the mixture evaporated by a slight heat to dryness. The sulphate of ammonia contained in the cold residue is to be removed by a small quantity of very cold water, and the residual alkaloid dried and weighed in this impure state; for the perfect purification of small quantities is attended with too great a loss to admit of the exact determination of the quantity of alkaloid contained in small quantities of bark. After having thus determined the weight of the alkaloid, the further examination of it is proceeded with, the cinchonine and quinine are separated by ether, &c.



In order to determine the proportion of kinovic acid, dilute solution of ammonia is to be added to the yellowish, glutinous matter which adheres to the filter, and which is, for the most part, greasy to the touch. This takes up the kinovic acid but not the fat. The solution is to be filtered, and to it a slight excess of muriatic acid added to precipitate the kinovic acid, which is then to be collected on a filter. The well washed glutinous precipitate is to be removed whilst moist from the filter, and dried on a watch-glass or porcelain capsule, and the weight of the thus obtained kinovic acid marked down. This, however, is only the larger portion of the quantity of the kinovic acid actually obtained from the bark. A smaller portion of it is still contained, combined with lime, in the lime residue which has been digested with the alcoholic tincture of bark. This kinovate of lime is very difficultly soluble in spirit of wine.

In order to obtain this smaller portion, the lime-residue, exhausted by alcohol, is to be dried and powdered, and then digested with cold distilled water. From the filtered liquid, which is almost as clear as water, the white and nearly pure kinovic acid is thrown down by a very slight excess of muriatic acid. It is then to be weighed and the sum added to that before obtained. By the direct treatment of powdered bark with milk of lime, the whole quantity of kinovic acid can be extracted from the bark. Also for the quantitative determination of the acid it is advisable to weigh it in the imperfectly pure condition, the loss accompanying the purification being very considerable.

If the qualitative examination of the bark has shown that this substance contains none or only a small proportion of alkaloid, but a large quantity of kinovic acid, or the latter only, the bark is more appropriately first treated with diluted milk of lime, and the kinovic acid precipitated by muriatic acid, by which method the testing of the residue for a possibly slight proportion of alkaloid is considerably facilitated. The dry residue of lime is then exhausted by alcohol, like the powdered bark, &c. In this manner I obtained from sixteen ounces of bark, containing kinovic acid, one grain of cinchonine, besides a large quantity of kinovic acid. The last more important constituent of the bark, the kinic acid, is now easily obtained by exhausting the residue of the bark, which has been treated by alcohol, with cold distilled water, evaporating



the filtered liquid and distilling it in a not too concentrated state with peroxide of manganese and moderately strong sulphuric acid; the least proportion of kinic acid in the liquid is soon indicated by the development and evolution of kinone, which takes place during this process; and the smallest quantity of the kinone, which is not distinctly perceptible by the smell, may be soon detected by the dark color, which the distillate assumes upon the addition of a few drops of a solution of ammonia.

This method of testing barks is distinguished from others by its great simplicity, by the correctness of the results, and by the possibility of detecting and quantitatively determining in one succession, and with the same material, all the more important constituents of the bark; I consider it as the best method known, not because it originates with me, but because it is adapted for the present stage of our knowledge of the chemical composition of cinchona barks, and is *practical*. It may be objected that it is rather troublesome, but this ought not to be of any consideration if we can be but sure of a correct result.

In conclusion, I must observe, that my method, though chiefly adapted for testing genuine barks, can be advantageously applied for examining new and apparently spurious barks. The occurring phenomena will then safely guide the experienced operator. With the barks containing paricine, the separation of the alkaloid is made very difficult, by its forming with the cinchona red contained in the bark, compounds soluble in acids and alkalies, which can be decomposed only with great difficulty. I refer in this respect to my last treatise on the Production and the Chemical Condition of Paricine, in Buchner's *Repertorium*.—*London Pharm. Journ.*, March, 1853, from *Jahrbuch f. Pharm.*

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#### ON THE PREPARATION AND PROPERTIES OF MAGNESIUM.

By R. BUNSEN.

According to Bunsen, fused chloride of magnesium is readily decomposed by the galvanic current. A metallic mass of several grammes in weight may be prepared in a short time with a few pairs of the carbo-zinc battery.

Magnesium obtained in this manner, when freshly broken, is sometimes slightly crystalline and laminar, sometimes finely

granular, or even fibrous, according to the mode in which it is broken; in the former case it is silver-white and very shining, in the latter more bluish-gray and dull. Its hardness is less than that of calc-spar. A moderate red heat is sufficient to fuse it. In dry air it is completely unchanged, and does not lose even the lustre of its surface; but in moist air it is speedily covered with a layer of hydrate of magnesia. Heated to redness in contact with the air, it ignites, and burns with an intense dazzling white light, forming magnesia. The light evolved during combustion in oxygen is of unusual intensity. A piece weighing 0.1 grm., burnt in this gas, gave a light equal to that of about 110 wax candles. As the surface of the burning metal was but small, that of the effective portion of the candle-flame being six or eight times larger, it may be supposed that the intensity of the light of magnesium burning in oxygen gas exceeds that of a candle-flame more than 500 times.

The metal decomposes pure cold water but slowly; water containing acid, however, is rapidly decomposed by it. Thrown upon dilute nitric acid, it ignites instantaneously. Concentrated sulphuric acid dissolves it with difficulty. It is not attacked by a mixture of sulphuric acid and fuming nitric acid in the cold. It burns in chlorine gas when heated previously to its introduction, and also in vapor of bromine, but with more difficulty. Its combustion in the vapors of sulphur and iodine proceeds with greater liveliness. Its spec. grav. at  $41^{\circ}$  F. is 1.7430. If the atomic value of magnesium be calculated from this, it is found to be twice that of nickel, namely 86 instead of 43. The magnesium obtained by electrolysis may be readily filed, bored, sawn, and beaten out flat, but exhibits scarcely more ductility than zinc at ordinary temperatures, whilst that reduced by potassium is very extensible, and may be hammered out into thin plates. This difference arises from the circumstance that the magnesium reduced by potassium retains a little of that metal; that obtained in the electro-chemical way, on the other hand, nearly always contains a small quantity of aluminium and silicium.

Barium, calcium and strontium cannot be reduced in the same manner.—*London Chem. Gaz.*, from *Ann. der Chem. und Pharm.*

ON THE SUBSTITUTION OF THE CARBONATE FOR THE OXIDE  
OF SILVER IN COMMERCE.

By MR. JOHN BORLAND.

At the present time, when attention is so properly directed to the detection and exposure of adulterations and impurities in many substances used in dietetics and medicine, I beg to be allowed to draw attention to the existence of a fraud which appears to me to be very generally practised with a medicine that is now come into extensive use as a tonic in dyspepsia and other complaints of the digestive organs. I allude to the substitution of carbonate of silver for oxide of silver.

I have carefully examined several specimens, all purchased from different respectable wholesale druggists in London, and have found that each of them, besides being contaminated with the oxides of copper, lead, and iron, contained a large portion of carbonic acid, and effervesced strongly when thrown into diluted nitric acid.

As none of the specimens were wholly soluble in liquor of ammonia, but contained a considerable quantity of some substance insoluble in this menstruum, I was lead to suppose that the evolution of the carbonic acid might be due to the presence of some earthy or alkaline carbonate that had been added by way of adulteration. This, however, after close examination, I found not to be the case, so that the effervescence could not be accounted for in any other way than by supposing the carbonic acid to be combined with the oxide of silver.

That it was carbonic acid, I satisfied myself by holding a watch-glass moistened with lime water above the effervescing solution, when a thin whitish film of carbonate of lime was visibly and quickly formed. I also passed the acid into a solution of pure caustic potass, and on afterwards testing the solution, found it to contain *carbonate* of potass.

In the preparation of this sophisticated article, the manufacturer, I suspect, has employed a solution of the carbonate of some one of the fixed alkalies, in place of its caustic solution, to precipitate the oxide of silver.

The product yielded by this process is consequently greater, as it contains the additional weight of the carbonic acid with which



it is combined,—a sum which is easily calculated if we consider how much the equivalent weight of the carbonate of silver, which is 138, exceeds that of the oxide, which is 116.

The manufacturer who disposes of this at the price of the pure oxide, is thus enabled to realize, besides the legitimate profit due to him as maker of the article, an *additional profit* of a sum equal to the commercial value of about  $2\frac{1}{2}$  ozs. of oxide of silver on every 16 ozs. that he sells.

This pecuniary view of the subject should, however, be only of very secondary importance to the dispensing Chemist, whose duty it is *not* to pry into the profits of the manufacturer, but above all to endeavor to serve his customers with a genuine article, and faithfully to carry out the intentions and wishes of the physician who may prescribe for them. Neither of these objects are effected by the dispensing of this or any other adulterated medicine.

In illustration of the difference between the two substances, I shall suppose that a patient receives from his physician a prescription for one dozen of pills, each of which is to contain one grain of oxide of silver. The prescription is with all confidence placed in the hands of the Chemist, to be carefully and properly made up, and the Chemist, either through the cupidity and dishonesty of himself or the manufacturer, or it may be through his own ignorance of, and inattention to the quality of the article supplied to him, in this case, by using the carbonate, makes up the pills with only ten grains of oxide of silver in place of twelve grains.

This difference, it may be said, is not great, but whether it be trifling and insignificant or not, it is no extenuation or palliation of the culpability attending the substitution of one medicine for another.

The Chemist who is coolly indifferent as to whether or not he sells a genuine or an adulterated article, will, with equal levity of feeling, be careless whether the impure medicine be one that is potent in its effects, or one that is capable of producing little or no appreciable influence on the living organism.

The process of qualitative analysis which I pursued for detecting the presence of the oxides of copper, lead, and iron, has nothing of novelty in it, and therefore need not be described. I may, however, remark that from several experiments which I made, I have reason to think that the carbonate of silver contains



a small quantity of water, it may be from not having been properly dried after being washed, or from its being combined with it constitutionally as a *hydrate*.

This additional impurity, together with those already referred to, make the difference between the oxide and carbonate greater than it really appears to be from a mere comparison of their respective equivalent weights.—*Pharm. Jour.*, May 1, 1853.

*Prince Street, Kilmarnock, March 22, 1853.*

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## NOTICE OF A NATIVE CARBONATE OF SODA FOUND IN THE TERRITORY OF THE NIZAM, INDIA.

By W. H. BRADLEY, Esq.

Surgeon in His Highness the Nizam's Service.

(Communicated by Mr. H. Deane.)

The salt in question is found at the Loonar Lake, which is situated in about  $20^{\circ}$  N. lat. and  $77^{\circ}$  long. There can be no doubt whatever, that the lake is an ancient volcano, long ago burnt out; and I have fancied that from this vent have streamed the peculiar trachytic rocks to be traced east and west for 100 miles, but this is purely conjecture.

It is placed just within the borders (south-east) of the Great Trap formation of Central India, is cup-shaped, the edge well-defined and continuous, being nearly five miles in circumference, with a depth averaging 500 feet, sloping at a great angle. The outer edge of the crater is flush with the surrounding country on the east and south-east side, and banked on the north, south, and west. The rocks are observed to be disposed in a stratiform manner, the result of the successive pourings forth of the molten matter, and of subsequent upheavals. The point of exit for the boiling lava was evidently at the north-east angle.

Some have imagined the hollow to have resulted from a subsidence of the crust of the earth, but such is not the case. I found decided proofs of its once volcanic energies in a hill covered with scorice, close upon the southern side. Besides, were it a case of subsidence, the dip of the stratiform masses of rock would indicate it, which they do not, being all in the usual direction of these trap rocks, dipping away slightly to the north-east.

The hollow is not completely filled with water, only about one-third of its surface being so occupied. A belt of palm trees (*Borassus flabelliformis*) surrounds the margin of the lake, and beyond them is a thick jungle of forest-trees and creepers of vigorous growth. The water of the lake is intensely bitter, is green in color, and contains neither fish or other instances of animal life. To leeward a very strong odor of sulphuretted hydrogen is perceptible, more so at some times than others. The water varies in depth over the lake, the deepest part being towards the west, where it is as much as twenty feet; but this depends entirely on the moonsoon, as a stream from the hill side falls into the lake, which is thus influenced by the rains.

The saline spring is in the centre of the hollow, and although, in dry seasons the crater is nearly free from water, there is always a puddle around this spring. The deposit of salt is found in layers under the mud, being the richest immediately around the spring. It can only be procured when the water in the lake is low, a circumstance that has not occurred for the last few years.

The natives collect it and store it up in heaps by the side of the lake, with only a thatching of palm leaves to protect it from the weather. It is used in making country soap, glass bangles, and for washing silk.

Although the lake itself is brackish, and strongly saturated with saline matter, still springs of fresh water flow close to its margin; but a little consideration shows that there is nothing astonishing in this circumstance, although, at first, it appears so to visitors. The fresh water, after percolating through the hills, finds vent here, whilst the saline spring rises from the bowels of the earth.

The vegetation of the spot consists principally of *Tamarindus*, *Bauhinia*, *Conocarpus*, *Flacourtia*, *Grewia*, *Combretia*, &c. Upon the sides of the crater are *Boswellia*, *Sterculia*, *Bombax*, *Dalbergia*, *Clematis*, &c. Great numbers of wild fowl resort here, but it cannot be a feeding place for them. Green pigeons, orioles, peacocks, monkeys, and hares, abound in the belt of jungle, with animals of less quiet behaviour, for I frequently saw the foot-prints of panthers in the sandy soil; and a gallant colonel, some few years ago, had a narrow escape with his life at this place, being severely injured by a tiger.

I could not approach the site of the spring to ascertain what the temperature of it might be—probably it is high. There are hot springs, some forty or sixty miles off, on the east, with a temperature of  $120^{\circ}$ , where the secondary overlying Trap meets with gneiss and granite.\*—*Pharm. Jour.*, May 1, 1853.

*Aurangabad, January 27, 1853.*

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## ON THE RESIN OF JALAP.

By W. MAYER.

The rhizomes of *Convolvulus Schiedeianus*, Zucc., known as jalap-roots, contain an active principle, a resin which has been repeatedly made the subject of chemical investigation by Cadet de Gassicourt, Tromsdorff, Gobel, Buchner, Herberger, Kayser and Sandrock. Johnston examined the resin from the rhizome of *Convolvulus orizabensis*, Pell. Buchner and Herberger believed they had detected a basic substance, jalapine, and a resinous acid. Kayser† extracted the resin with ether, and found that the insoluble residue had the complicated formula  $C^{42} H^{35} O^{20}$ , was identical with jalapine, and by treatment with bases was converted into an acid soluble in water, composed of  $C^{42} H^{35} O^{20} + HO$ . He found, moreover, that both this acid, which he called *hydrorhodeoretine*, and the original resin, *rhodeoretine*, were broken up, by treatment with hydrochloric acid, into sugar and a neutral substance unacted upon by either concentrated potash or concentrated sulphuric acid. He called this body *rhodeoretinole*. Sandrock obtained results essentially different from those of Kayser. He considered the part insoluble in ether to consist of two resins, one of which was precipitated by acetate of lead from the alcoholic solution, the other not. He described both resins as being converted by boiling with alkalis into soluble acids, of which one, ipomic acid, was precipitated by basic acetate of lead from the neutral potash salt; the other, jalapic acid, not.

The resin extracted from the rhizomes of *C. Schiedeianus* by

\* Mr. R. Reynolds has determined this salt to be compound of Soda, 32.8, Carbonic acid, 34.2, water, 31, Chloride of Sodium, 2, Alumina, a trace, and hence it is a sesquicarbonate.—See *Pharm. Jour.*, p. 517, vol. xii.

† *Chem. Gaz.*, vol. iii. p. 15.

alcohol, and partly decolorized by treatment with water and animal charcoal, is but partly soluble in ether; and it is the insoluble part which Mayer has examined.

*Rhodeoretine*.—The rhizomes were treated with boiling water until no more coloring matter was extracted. They were then dried, coarsely powdered, and digested three times with twice their weight of alcohol (0.833 sp. gr.) The alcoholic extract was mixed with water until it began to become turbid, and treated twice with bone-charcoal. The alcohol was then distilled off from the pale yellowish filtrate; a yellow brittle resin remained, which was powdered, digested with ether four or five times, dissolved three times in the least possible quantity of absolute alcohol, and precipitated by ether in order to effect the perfect separation of a minute quantity of the resin soluble in ether. Owing to the neglect of this purification, Kayser estimated the per-centage of carbon nearly 1.5 per cent. too high. Thus prepared, and dried at 212° F., rhodeoretine resembles in appearance the finest gum-arabic; it is odorless, tasteless, brittle, colorless, and transparent in thin pieces, perfectly white when powdered. When it contains but a small amount of water, it becomes soft below 212° F., and may be drawn out into fine threads having a pearly lustre. It softens at 265°.8 F. melts at 302° F. to a yellowish liquid; above 311° F. it begins to decompose. Its alcoholic solution has a feeble acid reaction. It appears to be the active principle of jalap;\* 3 or 4 grs. caused repeated and violent purging. It burns with difficulty, and its analysis could only be effected by means of a mixture of 9 parts of chromate of lead and 1 part bichromate of potash, the front part of the tube being charged with chromate of lead alone. Analysis gave—

Carbon	-	-	-	55.01	54.56	54.53	54.57	72	54.75
Hydrogen	-	-	-	7.89	8.07	7.89	7.89	60	7.73
Oxygen	-	-	-	37.10	37.37	37.58	37.54	37	37.52

On the analysis of rhodeoretine, which had not been precipitated by ether, 56.76 carbon and 8.16 hydrogen were obtained. Kayser obtained—

Carbon	-	-	56.06	55.87	42	56.37
Hydrogen	-	-	7.94	7.89	35	7.84
Oxygen	-	-	36.00	36.24	20	35.79

\* Schlossberger is not of this opinion. See his *Organ. Chemie*, 2nd edition, p. 280.



The resin, melted at 302° F., lost 1 equiv. of water, and gave—

Carbon	-	-	54.86	55.21	72	55.38
Hydrogen	-	-	8.04	8.00	60	7.69
Oxygen	-	-	37.10	36.79	36	36.93

Mayer states that he would not have ventured to assign to this body so high an atomic weight except on account of the combinations of the modification soluble in water and its products of decomposition.

Rhodeoretine is but slightly soluble in water, very soluble in alcohol, insoluble in ether. The alcoholic solution is precipitated both by water and alcohol. It is soluble in potash, soda, ammonia and baryta water, more quickly when warm. Acids do not again precipitate it from these solutions; it has become soluble in water. It is little soluble in cold solutions of carbonate of soda or potash, more so when boiled. It dissolves readily in acetic acid, very slowly in cold dilute nitric acid, more quickly and with decomposition when heat is applied; concentrated nitric acid acts upon it energetically, with considerable evolution of nitrous oxide and elevation of temperature. Concentrated sulphuric acid dissolves the resin, and communicates a beautiful red color, which changes to brown in a few hours. If the solution is diluted with water while red, a brownish oleaginous body, of agreeable odor, resembling fresh plums, separates, and the liquid contains sugar. Heated on platinum foil, the resin melts, turns brown, and burns with a bright smoky flame, disengaging a peculiar empyreumatic odor, resembling caramel. A coal remains.

*Rhodeoretinic Acid.*—This is the body formed by the action of strong bases upon the above resin. The change consists in the assimilation of 3 equivs. of water. It was prepared by introducing 100 grms. of pure rhodeoretine into 1 lb. of baryta-water, and stirring the mixture while heating till it boiled. The resin dissolved quickly and entirely. The baryta was separated from the cold solution by sulphuric acid in very slight excess, which was removed by means of carbonate of lead. The colorless filtrate, evaporated to dryness in a water-bath, left a substance exactly resembling rhodeoretine, except that it is very hygroscopic. Above 212° F. it softens, and melts between 212° and 248° F. Above 248° F. decomposition commences. It has no smell; the aqueous solution has a smell very much like quinces and a strong acid re-

action. It and its salts were all burnt in the same manner as the rhodeoretine :—

Carbon	-	-	-	52.44	52.61	52.48	52.89	72	52.94
Hydrogen	-	-	-	7.93	8.04	7.87	7.82	64	7.84
Oxygen	-	-	-	39.63	39.35	39.65	39.29	40	39.22

Rhodeoretinic acid is insoluble in ether, soluble in all proportions in alcohol and water. The aqueous solutions of the acid or the neutral ammonia salt are not precipitated by any neutral metallic salt; basic acetate of lead gives a very voluminous, flocculent, white precipitate. The acid expels carbonic acid from alkaline and earthy carbonates, as well as from carbonate of lead, especially by boiling. It behaves towards acetic, nitric, and concentrated sulphuric acid precisely as rhodeoretine does.—*London Chem. Gaz.*, Jan. 15, 1853.

## ON THE MANUFACTURE OF GLYCERIN.

BY CAMPBELL MORFIT, M. D.

Glycerin is generally made, on the large scale, either by directly saponifying oil with oxide of lead; or from “the waste,” or spent leys of the soap makers. The first mode of obtaining it is complex and expensive, while in the latter, the difficulty of wholly separating the saline matters of the “waste,” renders it impossible to obtain a perfectly pure product. In view of these obstacles, and the increasing demand for the article, both in medicine and perfumery, I submit a new process, which has been found, by actual practice, to combine the great and desirable advantages of economy of time, labor and money.

Take one hundred pounds of oil; tallow, lard or “stearin,” (pressed lard,) place it in a clean iron bound barrel, and melt it by the direct application of a current of steam. While still fluid and hot, add 15 pounds of lime, previously slaked and made into a milk with  $2\frac{1}{2}$  gallons of water, then cover the vessel and continue the steaming for several hours, or until the completion of the saponification. This is known when a sample of the resulting and cooled soap gives a smooth and lustrous surface on being scraped with the finger nail, and breaks with a cracking noise. By this treatment, the fat is decomposed, its acids unite

with the lime to form insoluble lime soap, while the eliminated glycerin remains in solution in the water along with the excess of lime. After it has been sufficiently boiled, it is allowed to cool and settle, and is then to be strained through a crash cloth.

The soap is reserved for sale to stearic candle makers, or else may be reconverted into saleable fat by the process given at pp. 432—445 Morfit's "*Applied Chemistry*."

The strained liquid contains only the glycerin and excess of lime. It must be carefully concentrated by steam heat. During evaporation, a portion of the lime is deposited on account of its lesser solubility in hot than in cold water. The remainder is removed by treating the evaporated liquid with a current of carbonic acid gas, boiling by steam heat, to convert any soluble *bi*-carbonate of lime that may have been formed, into insoluble neutral carbonate, allowing repose, decanting or straining off the clear supernatant liquid from the precipitated carbonate of lime, and further evaporating, as before, if necessary, to drive off any excess of water.

As nothing fixed or injurious is employed in the process, the glycerin thus prepared, will be absolutely pure.

BALTIMORE, Md., March, 1853. *Silliman's Journal*.

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#### SULPHATE OF QUINIDINE.

There has been recently distributed among commercial men a circular without date or signature and with no indication of its origin, announcing a large adulteration of the sulphate of quinine by a product little known, the *sulphate of quinidine*. It has excited much interest among dealers in quinine, and many methods have been suggested for detecting the presence of quinidine in sulphate of quinine.

This new organic base has been studied successively by MM. Henry and Delondre, Winckler, Howard, Zimmer, and Leers. MM. Henry and Delondre, its discoverers, considered it a hydrate of quinine. MM. Winckler and Leers examined a product made by M. Zimmer, of Frankfort, and did not derive their quinidine from the incriminated quinquinas; moreover, they give no processes for obtaining the substance. M. Howard has

announced that the base is abundantly contained in the *Quinquina cordifolia* of New Grenada, Bolivia and Peru.

These chemists are not agreed in the composition and properties of the quinidine, and no one of them states the proportions between the quinine and quinidine contained in the suspected barks.

The most striking characteristics of the quinidine appear to be its constant crystallization, its very slight solubility in ether, the greater solubility of its sulphate in water, compared with that of the sulphate of quinine.

MM. Bouquet and Schüffelé have examined a New Grenada Quinquina imported largely into Europe; it comes from near Fusagasuya, and is known under the name of *Quinquina caqueta*. Twelve kilogrammes of bark have afforded as pure quinine as that extracted from the *Q. calysaya*; the sulphate has all the characters of the sulphate of quinine, and shows no trace of quinidine.

In the black bittern which affords ordinarily the quinidine, MM. Bouquet and Schüffelé have found some grammes of crystallized products, resembling quinidine in some of their characters, but too different to be confounded with it. The total quantity of this crystallized product corresponded to 3 p. c. by weight of the sulphate of quinine obtained, in the treatment of the Quinquina essayed. It is easily understood that the works of a large manufacturer might produce these crystallized matters in small specimens, but not for adulterating the sulphate of quinine.

These authors conclude that the properties of the quinidine are so uncertain that it is prudent to wait for more investigation before admitting it among ascertained chemical bases.—*American Journal of Science and Arts*, March, 1853.

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## ON THE COMBINATION OF GLYCERINE WITH ACIDS.

By M. BERTHELOT.

According to the researches of M. Chevreul on the fatty bodies, most of the substances examined by him were capable of being resolved by saponification into fatty acids and glycerine, with fixation of the elements of water. The analogy established by this fact



between fatty substances and ethers was first pointed out by M. Chevruei.

M. Pelouze has attempted the inverse operation, that of reuniting glycerine with the acids, in the same manner as alcohol is combined with these substances. He has succeeded, on the one hand, in obtaining by direct union sulphoglycerates and phosphoglycerates analogous to the sulphovinates\* ; on the other†, in combining glycerine with butyric acid, the most readily etherizable of all the acids.

Butyrine, the only neutral fatty substance which has hitherto been reproduced, is obtained by indirect etherification, by causing either sulphuric or hydrochloric acid to act upon a mixture of glycerine and butyric acid.

I have succeeded in combining glycerine with other acids, namely, the acetic, valerianic, benzoic and sebacic acids, and others. The process which furnished these compounds is, with some modifications, that which is employed to etherize the fatty acids, and which furnished butyrine to MM. Pelouze and Gélis. I mix the dry acid with syrupy glycerine, heat the mixture to  $212^{\circ}$  F., pass through it a current of hydrochloric acid gas during several hours, keeping the mixture at that temperature, and then allow it to cool in the current of gas. I then leave the whole at the ordinary temperature for several hours, days, or even weeks, if necessary repeating the action of the hydrochloric acid. After the lapse of a longer or shorter time, the compound is produced; to isolate it, it is only necessary to saturate the mixture with carbonate of soda. It is purified by repeated washings and the usual processes.

The above-mentioned compounds are oleaginous, and scarcely, if at all, soluble in water. They are neutral substances, incapable of uniting immediately with the alkaline carbonates. Alkalies attack them slowly, saponifying them; in this way they all regenerate the acid from which they are derived, the glycerine being isolated. They may also be decomposed in an analogous manner by saturating their alcoholic solutions with muriatic acid, a process employed by Rochleder for the extrication of the glycerine from castor oil. In this manner, after a repose of twenty-four hours, glycerine and the ether of the acid employed are obtained. All

\* Berzelius subsequently prepared the tartroglycerates.

† Mémoire sur l'acide butyrique, par MM. Pelouze et Gélis.—*Ann de Chim. et de Phys.*, 3rd series, x.

that is necessary to separate the glycerine is the precipitation of the ether produced by water (except in the case of acetic ether) and the evaporation of the aqueous fluid. It still contains a little free acid, to get rid of which it is agitated with a little oxide of silver, and filtered after the addition of water. The concentrated fluid furnishes pure glycerine, presenting all its characters. I have reproduced it in this manner with each of the combinations formed with benzoic, valerianic, acetic and sebatic acids.

The acetic compound (*acetine*) is very distinctly soluble in water; it possesses an agreeable odor, similar to that of acetic ether, but much more permanent. Submitted to a carefully-conducted fractional distillation, it may be volatilized without sensible decomposition. After this operation, it preserves its pleasant odor, and presents the appearance of a limpid and colorless oil, possessing a taste which at first is saccharine like that of glycerine, afterwards acrid and ethereal. Treated with muriatic acid gas and alcohol, it is reduced, as before distillation, into acetic ether and glycerine. The mixture of acetic acid and glycerine, saturated at 212° F. with muriatic acid gas, only begins to furnish this substance after a week's repose. Several natural oils, examined by M. Chevreul and others, and especially cod-liver oil, yield acetic acid on saponification; it is possible that acetine may form one of the principles of these oils.

The valerianic compound (*valerine*) is more readily obtained; it possesses a peculiar, but faint, semi-ethereal, semi-valerianic odor. These are properties possessed by the *phocénine* of M. Chevreul, one of the principles of the oils of the dolphin, which is separable into phocenic or valeric acid and glycerine. The quantity of phocénine in these oils may amount to a fourth or a third of their weight.

The benzoic compound (*benzoïcine*) is formed in a few hours. It is more viscous than the two preceding. Its taste is aromatic and somewhat like pepper.

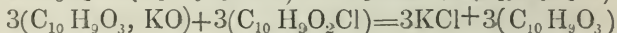
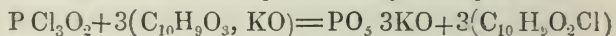
The sebatic compound (*sebine*) is formed in large quantity in twenty-four hours. It is an example of a neutral compound of a bibasic acid and glycerine.

The existence of these substances adds support to the facts already known, in showing that neutral fatty bodies really consist of fatty acids and glycerine.

The preceding compounds are not the only ones furnished by glycerine. I have already obtained several others, and hope to succeed in reproducing margarine and stearine, the most important of the glycerine compounds, and the principal constituents of the natural fatty substances.—*Lond. Chem. Gaz.*, April 1, 1853, from *Comptes Rendus*, Jan. 3, 1853.

#### ANHYDROUS VALERIANIC ACID.

Chiozza has obtained anhydrous valerianic acid by the method which Gerhardt has applied to the isolation of acetic and butyric acids. When oxychlorid of phosphorous,  $\text{P Cl}_3 \text{ O}_2$ , is brought into contact with valerianate of potash, a violent reaction takes place and the odor of the oxychlorid disappears. By treating the mass with a weak solution of carbonate of potash, and then with ether, and evaporating the ethereal solution, the anhydrous acid is obtained as a limpid, highly mobile liquid, lighter than water, and possessing a feeble odor of apples. The liquid boils at  $215^\circ$ , and distills over perfectly colorless: its vapor irritates the eyes and provokes coughing. The reaction by which the anhydrous valerianic acid is obtained, is represented by the equations,



the oxychlorid of valeryl,  $\text{C}_{10} \text{H}_9 \text{O}_2 \text{Cl}$ , is here first set free and then reacts on another portion of valerianate of potash.

By the action of oxychlorid of benzoyl on valerianate of potash the author has also obtained a compound of anhydrous valerianic with anhydrous benzoic acid represented by  $\text{C}_{10} \text{H}_9 \text{O}_3 + \text{C}_{11} \text{H}_5 \text{O}_3$ . It is an oily liquid, heavier than water, and leaving an odor like that of anhydrous valerianic acid. By distillation it is separated into anhydrous benzoic and anhydrous valerianic acids. Alkaline solutions transform it into valerianates and benzoates.

By the action of aniline upon anhydrous valerianic acid Chiozza has prepared valeranilide crystallizing in magnificent rectangular tables fusing at  $115^\circ \text{ C}$ . Its formula is  $\text{N C}_{12} \text{H}_6, \text{C}_{10} \text{H}_9 \text{O}_2$ .—*American Journal of Science and Arts*, March, 1853, from *Compt. Rend.*, xxxv. 568.

## Varieties.

*The general features and ancient Mammalia of the Mauvaises Terres of Nebraska.* [Being part of the Report of D. D. OWEN, Esq., U. S. Geologist.] —After leaving the locality on Sage Creek, [a southern branch of the Cheyenne,] affording the above-mentioned fossils, [fossil ammonites, &c. of the Eocene tertiary,] crossing that stream, and proceeding in the direction of White river, about twelve or fifteen miles, the formation of the Mauvaises Terres proper bursts into view, disclosing, as here depicted, one of the most extraordinary and picturesque sights than can be found in the whole Missouri country.

From the high prairies, that rise in the background, by a series of terraces or benches, toward the spurs of the Rocky Mountains, the traveller looks down into an extensive valley, that may be said to constitute a world of its own, and which appears to have been formed, partly by an extensive vertical fault, partly by the long continued influence of the scooping action of denudation.

The width of this valley may be about thirty miles, and its whole length about ninety, as it stretches away westwardly, towards the base of the gloomy and dark range of mountains known as the Black Hills. Its most depressed portion, three hundred feet below the general level of the surrounding country, is clothed with scanty grasses, and covered by a soil similar to that of the higher ground.

To the surrounding country, however, the Mauvaises Terres present the most striking contrast. From the uniform, monotonous, open prairie, the traveller suddenly descends one or two hundred feet, into a valley that looks as if it had sunk away from the surrounding world; leaving standing, all over it, thousands of abrupt, irregular, prismatic, and columnar masses, frequently capped with irregular pyramids, and stretching up to a height of from one to two hundred feet, or more.

So thickly are these natural towers studded over the surface of this extraordinary region, that the traveller threads his way through deep, confined, labyrinthine passages, not unlike the narrow, irregular streets and lanes of some quaint old town of the European continent. Viewed in the distance, indeed, these rocky piles, in their endless succession, assume the appearance of massive artificial structures, decked out with all the accessories of buttress and turret, arched doorway and clustered shaft, pinnacle, and finial, and tapering spire. One might almost imagine oneself approaching some magnificent city of the dead, where the labor and the genius of forgotten nations had left behind them a multitude of monuments of art and skill.

On descending from the heights, however, and proceeding to thread this vast labyrinth, and inspect, in detail, its deep, intricate recesses, the realities of the scene soon dissipate the delusions of the distance. The castel



lated forms which fancy had conjured up have vanished ; and around, on every side, is bleak and barren desolation.

Then, too, if the exploration be made in midsummer, the scorching rays of the sun, pouring down in the hundred defiles that conduct the wayfarer through this pathless waste, are reflected back from the white or ash-colored walls that rise around, unmitigated by a breath of air, or the shelter of a solitary shrub.

The drooping spirits of the scorched explorer are not permitted, however, to flag. The fossil treasures of the way, well repay its sultriness and fatigue. At every step, objects of the highest interest present themselves. Embedded in the debris, lie strewn, in the greatest profusion, organic relics of extinct animals. All speak of a vast fresh-water deposit of the early Tertiary Period, and disclose the former existence of most remarkable races, that roamed about in bygone ages high up in the Valley of the Missouri, towards the sources of its western tributaries ; where now pastures the big-horned *Oris montana*, the shaggy buffalo or American bison, and the elegant and slenderly constructed antelope.

Every specimen as yet brought from the Bad Lands, proves to be of species that became extirminated before the mammoth and mastodon lived, and which differ in their specific character, not alone from all living animals, but also from all fossils obtained even from cotemporaneous geological formations elsewhere.

Along with a single existing genus, the Rhinoceros, many new genera never before known to science have been discovered, and some, to us at this day, anomalous families, which combine in their anatomy, structures now found only in different orders. They form, indeed, connecting links between the pachyderms, plantigrades and digitigrades. For example, in one of the specimens from this strange locality, described by Dr. Leidy under the name of *Archæotherium*, we find united characters belonging now to the above three orders ; for the molar teeth are constructed after the model of those of the hog, peccary and babyroussa ; the canines as in the bear ; while the upper part of the scull, the cheek bones, and the temporal fossa assume the form and dimensions which belong to the cat tribe. Another, the *Oreodon* of Leidy, has grinding teeth like the elk and deer, with canines resembling the omnivorous thick-skinned animals ; being, in fact, a race which lived both on flesh and vegetables, and yet chewed the cud like our cloven-footed grazers.

Associated with these extinct races, we beheld also, in the Mauvaises Terres, abundant remains of fossil pachydermata, of gigantic dimensions, and allied in their anatomy to that singular family of proboscidean animals, of which the tapir may be taken as a living type. These form a connecting link between the tapir and the rhinoceros ; while, in the structure of their grinders, they are intermediate between the daman and rhinoceros ; by their canines and incisors, they connect the tapir with the horse, on the one hand, and with the peccary and hog on the other. They belong to the same

genus of which the labors of the great Cuvier first disclosed the history, under the name of *Pulæotherium*, in publishing his description of the fossil bones exhumed from the gypsum quarries of Montmartre, near Paris, but are distinct in species; and one, at least, of this genus, discovered in the Bad Lands (*Pulæotherium Proutii*), must have attained a much larger size than any which the Paris basin afforded. In a green, argillo-calcareous, indurated stratum, situated within ten feet of the base of the section, a jaw of this species was found, measuring, as it lay in its matrix, five feet along the range of the teeth, but in such a friable condition, that only a portion of it could be dislodged; and this, notwithstanding all the precautions used in packing and transportation, fell to pieces before reaching Indiana.—*American Journ. of Science and Arts.*, March, 1853.

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*Fusion and volatilization of Platinum and Silica.*—BERZELIUS in his *Traité de Chimie* (German edition) reports that he had seen a mass of semifused platinum which M. Sefström had obtained by heating in an ordinary furnace filings of platinum mixed with charcoal placed in a crucible. This fact, which had been overlooked, has been carefully studied and submitted to examination on a large scale by M. Deville, so that now the fusion of platinum in a coal fire is no more a difficulty, neither the volatilization of this metal.

In order to verify a fact in analytical chemistry concerning the silicates, M. Henri St. Claire Deville put a platinum crucible, closed with its cover, in a Hessian crucible, and placed it in a small laboratory furnace. The combustible consisted accidentally of furnace cinders ("escarbilles") and the whole was subjected to the action of the bellows of a forge. On returning after some time to examine the state of the silicate, he saw with surprise that the platinum crucible, as well as the Hessian, was reduced to a paste, perfectly fused.

On reporting the facts to the Academy, M. Deville presented a platinum crucible, which he had caused to melt in lime; he had also a cover of platinum, and also a specimen of pure silver fused in graphite.

As sandstone is perfectly fusible at these temperatures, M. Deville substitutes for it some compact lime containing a little silica, which he had carved into a crucible; the air reached the furnace through a plate of iron pierced with holes arranged circularly to a distance of 5 centimeters around the center.

I have seen the apparatus, and observed the simple and easy method of using it; the humble appearance of this small furnace stands out the more remarkably in the magnificent laboratory of the Ecole Normale, where M. Deville carries on his labors. This chemist has also succeeded in volatilizing silica, which had already been previously done by M. Gaubin, with a gas blowpipe of his invention, fed by oxygen.

It is essential for success that the combustible should be of the proper kind, and finely divided. The best is made of the residue of the combus-

tion of coal, mixed with cinders such as escape from the grate of a furnace, and are called "escarbilles." Coke and charcoal have produced nothing satisfactory.

M. Deville informs me that he has found no difference between the fused and welded platinum. We add, however, that he has not compared the electrochemical properties of these metals, nor the action on light.—*Silliman's Journal*, May, 1853.

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*On the Use of Fatty Acids as a Source of Light.* By J. Cambacérès. The author has endeavored to reduce the cost of fabrication of these fatty acids by employing such materials as will furnish a by-product more valuable than the sulphate of lime obtained by the saponification with lime. He has succeeded in preparing in this way sulphate of alumina, a substance largely used in dyeing.

For this purpose, he first saponifies the fat with potash or soda lye. The soap, containing an excess of alkali, acts upon clay so as to dissolve the alumina, which combines with the fatty acids, forming a soap which is insoluble in the alkaline liquid, and the alkali is again set free. The alumina-soap may be separated as a gelatinous precipitate by an excess of alkali, by a large quantity of water, or by saline solutions. The gelatinous character of the alumina soap facilitates its decomposition by acids, and the alumina salt may be obtained by evaporation, during which the silica likewise taken up by the alkali is separated.

The decomposition of soap by alumina is undoubtedly owing to the affinity of alumina for fat acids and the insolubility of the alumina soap in alkaline lye.

In order to prepare the fat acids in this way at the least possible cost, care must be taken that in washing the soap as little alkali as possible be left. However, a residue of alkali is not objectionable on any other grounds, for when the soap is decomposed with sulphuric acid, it forms alum. It follows, therefore, from these facts, that in places where clay free from iron can be procured, the fabrication of acetate and sulphate of alumina may very advantageously be combined with that of stearic acid, because, according to the author, the relative cost of production, notwithstanding the high price of alkalies, is less than when lime is employed in the saponification.—*Chem. Gaz.*, May 2, 1853, from *Comptes Rendus*, vol. lvii. p. 144.

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*Manufacture of Paper.*—It is well known that paper which is very white when first made, often becomes yellow some time after being used. The yellow color is not always uniform, but often comes out in spots more or less large of a circular outline, and a rusty tint. In some Paris manufactories, this defect (which is incorrectly attributed to an alteration of the fibre) is remedied in a simple manner, and as the process of discoloration may not be commonly used in America, judging from some paper I have seen, I make a brief mention of the subject.



These researches were made here by a manufacturer who combines in a high degree science and technology. M. Gélis recognized at first that the change of color was not due to any alteration in the ligneous fibre, and was owing to iron. But what the source of the iron? and how is it introduced? An examination of the manufacture, through its processes, shows that there is less iron in the pulp than in the paper made from it. The origin of the iron is hence not in the preparation of the pulp, but it must be attributed to the drying cylinders of steel under which it is passed while yet moist. The chlorine contained in the paste, and which it is very difficult wholly to remove by the washish process, becomes suddenly vaporized under the heated cylinders, attacks these cylinders, and forms the protochlorid ( $\text{Fe Cl}$ ) which thence impregnates the paper. Colorless itself, this chlorid gradually absorbs oxygen on exposure to the air, and thus the coloration takes place.

It is therefore not a remedy against iron but against chlorine that is required. The hyposulphite of soda is the simple antidote, and a very small quantity suffices to eliminate a large quantity of chlorine, since one equivalent of hyposulphurous acid requires four equivalents of chlorine, to transform it into sulphuric acid.

For testing the complete removal of the chlorine, M. Gélis uses a liquor made of iodide of potassium and amidon (starch.) This liquor becomes instantly blue if there is the least trace of chlorine.—*Silliman's Journal*.

*A Formula for a Castor Oil Electuary.* By SEPTIMUS PIESSE.—Many persons' stomachs revolt at taking castor oil in an undisguised form. To overcome this repugnance, it has been the practice to administer it in the shape of an emulsion, which involves a large increase in the bulk of the dose to be taken, as well as the employment of a considerable quantity of gum or the yolk of an egg, to form the emulsion. To disguise the castor oil, to give it in a condensed form, and to diminish, as much as possible, the quantity of the excipient, the following formula has been devised:

Take of Castor oil, . . . . .	3 ounces.
White soft soap, . . . . .	1 drachm.
Simple syrup, . . . . .	1 drachm.
Oil of cinnamon, . . . . .	6 drops.

Rub the soap with the simple syrup in a mortar, and then add gradually the castor oil, with constant trituration, until it is thoroughly incorporated with the above ingredients. Finally, mix with the electuary thus formed, the oil of cinnamon, or any other essential oil that may be preferred. By these means, a gelatinous electuary will be formed, which is rather palatable than otherwise, and nearly equals, bulk for bulk, castor oil in strength. The quantity of potash present in a dose of this electuary is only a homœopathic dose, and, consequently, not likely to produce a bad result in any case, even when its use should be contra-indicated.—*Annals of Phar.*



*Salt of Western Pennsylvania.* By JAMES C. BOOTH and T. H. GARRETT. —The value of common salt for dairy purposes, preserving food, and for general use, and the singularly advantageous position of the salt springs or wells of Western Pennsylvania, issuing at the mouths of coal mines, led us to investigate the relative purity of some of the salt manufactured there, in comparison with foreign salt imported and largely employed on the coast. We subjected to analysis, Turk's Island, Liverpool ground Rock, and two samples of salt, coarse and fine, kindly furnished us by Mr. Lewis Peterson, of Salina Farm, near Tarentum, Pennsylvania, where and by whom the two samples were manufactured.

The following tabular arrangement of the result of analysis gives a clearer comparative view of their relative purity and value :

	Chloride of Sodium.	Chloride of Magnes.	Chloride of Calcium.	Sulphate of Magnes.	Sulphate of Lime.
Coarse, Tarentum, Penn.,	97.89	1.00	1.11	none.	trace.
Fine, " "	98.87	0.51	0.62	none.	trace.
Liverpool ground Rock,	98.55	0.08	none.	0.16	1.21
Turk's Island, . . .	93.85	3.47	none.	none.	2.68

Beside these, the Turk's Island contains a little sand, of which the others only contain traces. The difference between them is evidently that the impurities in the Pennsylvania salt are chlorides, and in the others, sulphates of lime and magnesia. Since the chlorides are easily removed by washing, it is evident that the Pennsylvania salt might be brought to a state of absolute purity, if it were desirable or necessary. The salt manufactured by Mr. Lewis Peterson, bears a close comparison with the Liverpool ground Rock, and his fine variety surpasses it. Both of his varieties are 4 or 5 per cent. purer than Turk's Island salt.—*Journal of the Franklin Institute of Pennsylvania.*

*Cachou Aromatisé.*—Take of extract of liquorice and water, of each 3½ oz.; dissolve by the heat of a water-bath, and add Bengal catechu, in powder, 462 grs.; gum arabic, in powder, 231 grs.; evaporate to the consistence of an extract, and then incorporate the following substances, previously reduced to fine powder:—Mastic, cascarilla, charcoal, and orris root, of each 30 grs.; reduce the mass to a proper consistence, remove it from the fire, and then add English oil of peppermint 30 drops, tincture of ambergris and tincture of musk, of each 5 drops; pour it on an oiled slab, and spread it out, by means of a roller, to the thickness of a sixpenny piece; after it has cooled, apply some folds of blotting paper to absorb any adhering oil, moisten the surface with water, and then cover it with the sheets of silver leaf. It must now be allowed to dry, then cut into very thin strips, and these again divided into small pieces, about the size of a fenugreek seed.—*Pharm. Journ., from Journal de Pharmacie.*

*Juniper Tar Soap*.—This soap is made by distillation from the tar of the wood of the *Juniperis communis*, by dissolving this spirit in a fixed vegetable oil, as that obtained by expression from almonds or olives, and forming a soap by means of a weak soda-lye, after the customary manner. This yields a moderately firm and clear soap, which may be readily used by application to parts affected with eruptions at night, mixed with a little water, and carefully washed off the following morning. This soap has lately been much used for eruptive disorders, particularly on the Continent, and with various degrees of success. It is thought that the efficient element in its composition is rather less impure hydrocarburet than that known in Paris under the name *huile de cade*. On account of its ready miscibility with water, it possesses great advantage over the common tar ointment.—*Annals of Pharmacy*.

*Chemical examination of Naples Soap*.—A. Faiszt has submitted this celebrated shaving soap to analysis. He states that it is made by saponifying mutton fat with lime, and then separating the fatty acids from the soap thus formed, by means of a mineral acid. These fatty acids are afterwards combined with ordinary caustic potash to produce the Naples soap. He found that 100 parts of this soap contained

	Parts.
Fatty acids, . . . . .	57.14
Potash combined with the fatty acids, .	10.39
Sulphate of potash, chloride of potassium, with a trace of carbonate of potash, .	4.22
Silica, &c. . . . .	0.46
Water, . . . . .	27.68

*Annals of Phar., from Gewerbeblatt aus Württemberg.*

*A Purple-red Ink for marking Linen*.—The place where the linen is to be marked is first wetted with a solution consisting of three drachms of carbonate of soda, and three drachms of gum arabic, dissolved in an ounce and a half of water, then dried and smoothed. The place is now to be written on with a solution composed of one drachm of chloride of platina dissolved in two ounces of distilled water, then allowed to dry. When quite dry, the writing is to be painted over with a goose's feather, moistened with a liquid consisting of one drachm of protochloride of tin dissolved in two ounces of distilled water.—*Annals of Phar., from Böttger's Polyt. Notizblatt*.

*Hyposulphite of Soda and Silver*.—This compound substance has lately been recommended as a remedial agent, by Dr. J. Delioux, of Cherbourg. It is prepared by pouring upon oxide of silver, recently precipitated by potassa, a solution of hyposulphite of soda, until it is completely dissolved. After evaporation of this mixture, crystals of hyposulphite of soda and silver remain. This compound salt has the appearance of a greyish-white

crystalline powder, having a sweetish-slightly styptic taste ; it is readily soluble in water, but almost, if not entirely insoluble in alcohol. After long exposure to light, it becomes of a black color, whereas it preserves its greyish-white crystalline appearance if carefully kept, either in bottles or dark-colored glass, or covered with paper. Its solution also becomes almost black if long exposed to the light, yet not so quickly as the solution of nitrate of silver. If perfectly pure, it does not discolor the skin, or linen, as the nitrate of silver does : nor does it possess the same power in coagulating albumen as the nitrate does. Dr. J. Delioux has administered this compound salt in many diseases, the results of which trials he has made known to the profession in one of the medical journals of Paris.—*Annals of Pharmacy*.

*Photography :—The Fixation of Colors.*—M. Niepce de Saint-Victor laid before the Academy of Sciences, at the sitting of the 8th of November, daguerreotypes upon which he had succeeded in fixing, in a manner more or less permanent, colors by the camera-obscura. M. Niepce states, that the production of all the colors is practicable, and he is actively engaged in endeavoring to arrive at a convenient method of preparing the plates. "I have begun," he says, "by reproducing in the dark chamber, colored engravings, then artificial and natural flowers, and lastly dead nature—a doll, dressed in stuffs of different colors, and always with gold or silver lace. I have obtained all the colors ; and, what is still more extraordinary and more curious is, that the gold and silver are depicted with their metallic lustre, and that rock-crystal, alabaster, and porcelain, are represented with the lustre which is natural to them. In producing the images of precious stones and of glass we observe a curious peculiarity. We have placed before the lens a deep green, which has given a yellow image instead of a green one ; whilst a clear green glass placed by the side of the other is perfectly reproduced in color." The greatest difficulty is that of obtaining many colors at a time ; it is, however, possible, and M. Niepce has frequently obtained this result. He has observed, that bright colors are produced much more vividly and much quicker than dark colors :—that is to say, that the nearer the colors approach to white the more easily are they produced, and the more closely they approach to black the greater is the difficulty of reproducing them. Of all others the most difficult to be obtained is the deep green of leaves ; the light green leaves are, however, reproduced very easily. After sundry other remarks, of no peculiar moment, M. Niepce de Saint-Victor informs us, that colors are rendered very much more vivid by the action of ammonia, and at the same time this volatile alkali appears to fix the colors with much permanence. These results bring much more near than hitherto the desideratum of producing photographs in their natural colors. The results are produced upon plates of silver which have been acted upon by chloride of copper or some other combination of chlorine. The manipulatory details have not been published, but we understand they are very easy.—*Jour. Frank. Inst. from the London Athenæum*.



## Editorial Department.

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AMERICAN PHARMACEUTICAL ASSOCIATION.—As the approaching meeting of the Association will occur before our next issue, we again call attention to the President's notice of invitation, hoping that the attendance will be large. The time fixed on, we are informed, does not suit our Southern and Western brethren, yet we hope some of them will make a sacrifice and attend; after which they can refresh themselves by a few days among the White Mountains, or the Catskills, on their return.

### NOTICE.

#### AMERICAN PHARMACEUTICAL ASSOCIATION.

The annual meeting of the American Pharmaceutical Association will be held at Boston on the 24th of August, 1853. The object of the Association being the advancement of Pharmacy in the United States, it is desirable that a general interest in its favor should be created among the pharmacutists and druggists. According to the requirement of the Constitution, the following conditions of membership are published, and an invitation is hereby extended to all who are eligible to membership and who feel an interest in the Association, to attend the ensuing meeting.

"SECTION 2d, *Article 1st*.—All pharmacutists who shall have attained the age of 21 years, whose character, morally and professionally, is fair, and who, after duly considering the obligations of the Constitution and Code of Ethics of this Association, are willing to subscribe to them, are eligible for membership.

"*Article 2d*.—The members shall consist of Delegates from regularly constituted Colleges of Pharmacy and Pharmaceutical Societies, who shall present properly authorized credentials, and of other reputable pharmacutists, feeling an interest in the objects of the Association, who may not be so delegated, the latter being required to present a certificate signed by a majority of the delegates from places whence they come. If no such delegates are present at the meeting, they may, on obtaining the certificate of any three members of the Association, be admitted, provided they are introduced by the Committee on Credentials."

"*Article 5th*.—Every local Pharmaceutical Association is entitled to send five delegates."

*Philadelphia, 4th mo. 11th, 1853.*

DANIEL B. SMITH, President.

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MASSACHUSETTS COLLEGE OF PHARMACY AND THE AMERICAN PHARMACEUTICAL ASSOCIATION.—We learn through Mr. Joseph Burnet, that at a meeting of the Massachusetts College of Pharmacy, held on the 2d of June, Daniel Henchman, William A. Brewer, Thomas Restieaux, H. W. Lincoln and T. Larkin Turner were elected delegates to attend the meeting of the Association. On the same occasion a committee was appointed to make the necessary preparations for the accommodation of the Association, which we are authorized to say will convene on Wednesday, the 24th of August next, at the rooms of the Massachusetts College of Pharmacy in Phillips' Place, Boston.



INSPECTION OF DRUGS.—At page 297 the reader will find an account of the proceedings of the Philadelphia College of Pharmacy in relation to the inspection of drugs. This action appears to have arisen partially from the disposition manifested by the Government to appoint new examiners, as instanced in the displacement of Dr. Stewart of Baltimore, whose qualifications for the office are undoubted, and partially from dissatisfaction with the manner in which the law has been executed at this port. Believing that a new appointment was about to be made, the College, impressed with the importance of having properly qualified officers, felt bound to make known its views to government, and urge the necessity not only of having a well qualified examiner, but that the department should issue new instructions by which there would be less latitude for the occurrence of anomalous decisions. The new circular of instructions will be found at page 301. We refrain from an analysis of it at this time, believing that while the document is certainly an improvement on the past indefinite instructions in some respects, yet it needs amendment in others, and should receive the deliberate attention of the several Colleges, and the American Pharmaceutical Association, especially as Mr. Guthrie has invited criticism. Dr. Bailey deserves credit for his interest in the matter, and we trust he will long continue an executor of the law; yet, while we have great confidence in his own good sense, we hope the last clause of the instructions will not prove in other hands the origin of annoying delays as is likely to be the case where an examiner is disposed to be *crooked* in his course of action. While the law gives the *selection* of the analytical chemist to the collector, and requires of him *a detailed analysis under oath* or affirmation, we cannot but doubt the propriety and justice of again bringing the issue in contact with the examiner when the *law* distinctly says the chemist's report shall be *final*.

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PROFESSIONAL QUACKERY.—The stand which Medical Associations have taken in regard to quackery, has been clear and decided—no quarter is given—no compromise permitted; yet quackery in a modified form is acknowledged and encouraged by many of the very men who are most decided in their condemnation of the more glaring species. An apothecary invents a compound of some well known drug or drugs, sends specimens of it to certain prominent physicians, accompanied by a statement of its superior qualities, and invites them to prescribe it. So far all is well; every apothecary has a perfect right to manifest his enterprise, by anticipating the wants of his medical patrons. But when the physician has tried it and is pleased with its effects, and prescribes it in other neighborhoods, his patients are compelled to go to the original apothecary, who refuses to divulge the secret of its composition and mode of preparation. If the physician asks for it, he is told in such general terms, that he is unable to give the recipe. Now, if physicians are true to their principles, they should refuse to prescribe a preparation, the recipe of which is withheld from them, for there is really little difference between prescribing such preparations and regular quackeries.

STATISTICAL CIRCULARS.—The Committee appointed by the Board of Trustees of the Philadelphia College of Pharmacy, at the request of the National Pharmaceutical Association, to collect statistical information, has issued the following circular to druggists throughout the Middle, Southern, and Western States, (generally one to each principal city and town,) querying: “1st. How many persons in —— prepare and sell standard medicines as their principal business, and how many connect the sale of medicines with general merchandizing? 2d. To what extent do your druggists and apothecaries employ the United States Pharmacopœia as their standard authority, and use the official weights and measures? 3d. Do Physicians generally send their prescriptions to the apothecaries and druggists of the district named, or do they furnish medicines themselves? 4th. Have the apothecaries and druggists formed any association for mutual advantage, or for educational purposes? 5th. What information have you in relation to the prevalence of quackery, its increase or diminution; the sale of poisons, or on other subjects relating to our business, likely to be interesting?” The Committee have thus far received answers from the following persons and places, viz:—J. M. Allen, Chester, Del. Co., Pa.; Dr. George Martin, Concordville, Pa.; Wm. G. Baker, Lancaster City, Pa.; Wm. Heyser, Chambersberg, Pa.; Dr. J. M. Confer, Fosteria, Blair Co. Pa.; Peter V. Coppuck, Mount Holly, N. J.; R. S. Patterson, Washington, D. C.; Dr. James Cooke, Fredericksburg, Va.; Charles A. Santos, Norfolk, Va.; Dr. R. H. Stabler, Alexandria, Va.; Robert Battey, Rome, Floyd Co., Georgia; Dr. Maxwell, Pensacola, Florida; E. Bernard, Jr., Tallahassee, Florida; P. Caverly Boyer and John H. Tilghman, New Orleans, La.; P. H. McGraw, Natchez, Miss.; Dr. Kemp Alston, Jackson, Miss.; Dr. R. O. Currey, Nashville, Tenn.; G. T. Chamberlain, St. Louis, Mo.; and Wm. A. Graham, Zanesville, Ohio. The Committee tender their thanks through this medium for the attention bestowed. They also hope that any druggist, apothecary or physician who, seeing the above list of questions, feels disposed to communicate information, will do so by addressing the Chairman of the Committee, Edward Parrish, Philadelphia, any time before the 1st of August.

We have received a copy of a Circular of similar import issued by the the Massachusetts College of Pharmacy extensively through that section of country. We trust our brethren of the New York, Baltimore, Richmond and Cincinnati Colleges will claim a share in the work.

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THE SMITHSONIAN INSTITUTION.—During a recent visit to Washington we were much gratified by calling on Professor Henry, Secretary of the Smithsonian Institution, who politely explained to us some of the more prominent operations going on under its auspices. The object of its founder, Mr. Smithson, was the diffusion of knowledge amongst men, and whilst stating this, he refrained from pointing out the way it should be effected. There exists a difference of opinion regarding the manner of executing the trust, one portion of the Regents being in favor of making it directly cumulative

as the depository of a great National Museum and Library, whilst others, of which Prof. Henry is the chief, advocate the devotion of the funds to the publication of original memoirs, to the institution of new researches, to the encouragement of all kinds of laudable scientific explorations and investigations, whether done specially for the Institution or indirectly by others; in a word, to make the Institution a great central, science-sustaining, knowledge-spreading power, whose influence shall be felt and appreciated where ever and by whosoever the arts and sciences are cultivated. The fund is deemed too limited to carry out the ideas of those who wish to make it a National Library and Museum; and unless Congress should make donations so liberal as to swallow up the fund of *Smithson* by their magnitude, rendering its endowment national rather than individual, it could not be enlarged to such an extent as to make it pre-eminently important to men of science, and effect the other offices properly required by the will of its founder.

One of the most useful features of the Institution as now conducted, is its system of literary exchanges with scientific societies and public libraries of Europe, which will do more for the dissemination and circulation of scientific literature than any pre-existing arrangement. The Institution has agents in Europe who distribute to the several societies &c., 1st, its own publications; 2d, the transactions and other publications of American societies, and to some extent the productions of individuals when sent as donations to societies abroad. The same agents receive in return the similar publications of Europe, and forward them to Washington, from whence they are distributed to the scientific bodies here free of all expense, except the carriage from Washington, the duties being remitted by Congress on all publications coming through this medium. Professor Baird, who has charge of the Exchange department, kindly explained to us the details of the system and the manner in which the exchanges are effected. We saw in the book room the packages that were about being forwarded to Europe, those for each country together; their bulk, amounting to many hundred weight, if not tons, gave a forcible illustration of the extent of this branch of the operations. Among other labors the Institution is conducting an extended system of simultaneous meteorological observations, by near 400 observers, in as many locations over the surface of the United States, Canada, Nova Scotia, the West Indies, and on the Pacific Coast. The observations, which are recorded in blanks prepared by the Institution, and distributed to the observers, are made several times in the day at stated intervals, and it is hoped, when a sufficient number of these have accumulated at Washington, that the actual condition of the atmosphere, over the whole country, at several times in the day, and for consecutive weeks and months as thus ascertained, will enable the scientific corps to solve the problem of American storms, and many other phenomena yet but little understood. Already Prof. Henry has commenced a series of meteorological charts drawn on outline maps of the United States, with clear weather, clouds, fog, rain, snow, and hail marked on them by colors, each map re-



presenting the state of the atmosphere at a given hour over the entire extent of our country.

The five volumes of the *Memoirs of the Institution* are already a noble monument to the memory of Smithson, as imperishable as the existing civilization, and long may they continue to emanate on the mission of diffusing knowledge to mankind.

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TULLY'S MATERIA MEDICA.—The fifth number, March, 1853, of this work is acknowledged. It contains a continuation of the "Means of ascertaining the powers of new and previously unknown articles,"—Experiments on the diseased human subject,—experiments on the healthy human subject,—careful observation of the effects of articles taken by mistake,—of what *Materia Medica* should consist,—what the nomenclature should be.

We hope the patronage of the book will induce Dr. Tully to continue its publication, as, from his long experience as an observer, his pages will doubtless be filled with numerous researches as interesting as original.

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*Announcement and Catalogue of* EDWARD PARRISH'S SCHOOL OF PRACTICAL PHARMACY *for Medical Students, S. W. corner of 8th and Arch sts. Philadelphia, 1853.*

Apothecaries frequently have cause to complain of the construction of physicians' prescriptions as regards the association of incompatibles, and in giving directions incapable of being followed. It may safely be asserted that the authors of such have not had an opportunity of practising Pharmacy. The School of Practical Pharmacy of Mr. Parrish is intended to meet this want as regards the future, by affording to medical students, during the pursuit of their other studies, opportunities for learning the manipulations of the apothecary's shop. "The art of prescribing medicines, especially with reference to combining them extemporaneously, claims a large share of attention, and brings prominently into view pharmaceutical nomenclature and abbreviation, the grammatical construction of prescriptions, the calculation and apportionment of doses, the judicious use of excipients and adjuvants, and the avoidance of incompatibles." The tuition is by lectures and by practising classes of four students each, one of whom acts as recorder and keeps regular minutes of the operations of his class. In a word, we can cheerfully recommend this useful private institution to the attention of medical students as the source of knowledge rarely to be obtained without service in the shop. The fee for the course of three months, which includes the lectures and practice, is ten dollars.

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*The Virginia Medical and Surgical Journal.* Edited by GEORGE A. OTIS, M. D., and HOWELL L. THOMAS, M. D., Richmond, Virginia.

This new monthly of 84 pages, dates its origin in April, 1853, and in neatness of execution, variety of matter, and Editorial spirit, ranks with the best periodical literature of the medical press.



*The Southern Journal of the Medical and Physical Sciences.* Nashville, May, 1853. No. 3.

This Journal contains an elaborate report to the Tennessee Medical Society, "On the Adulteration of Medicines, Chemicals, Drugs, etc., by Dr. R. O. Currey," which will do good by awakening the attention of druggists and physicians to the subject. We are glad when reports of this kind represent the *actual* state of the drugs in the United States. Not what has been, but what is. Any dictionary of adulterations will show the former. Nothing but a watchful scrutiny on the part of qualified physicians and apothecaries will detect the latter.

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*The Amazon and the Atlantic Slopes of South America. Being a series of letters published in the National Intelligencer and Union newspapers, under the signature of "Inca."* By M. F. MAURY, LL.D., Lieut. U. S. Navy. Revised and corrected by the Author. Washington: published by Franck Taylor, 1853. pp. 63, octavo.

Lieut. Maury in the above pamphlet has undertaken to show that the Atlantic Slopes of South America, which include the vast basins drained by the Amazon and the La Plata, and their tributaries, constitute one of the most remarkable regions of the globe, viewed in relation to its geological formation, the immense extent of its water courses, the amazing fertility and productiveness of its soil, the delightfulness of its climate, and its admirable adaptation to support a numerous population. Being to a large extent intra-tropical, and constantly irrigated by the never ceasing equatorial currents blowing from the ocean, its seasons are perpetual. The fact that these rivers are navigable for thousands of miles, even into Bolivia, Peru, Ecuador, and Venezuela, through their main trunks and branches, at once exhibits their immeasurable capabilities for commerce, when, like our own western waters, they shall have become the pathways for the never-tiring steamer. The object of Lieut. Maury, in delineating the extraordinary features of this vast garden wilderness, is to prove the propriety, nay even the necessity, of the great maritime and commercial powers of the North combining their influence to compel the Brazilian government to abandon its "dog-in-the-manger" policy, by which this vast region is sealed against foreign traders, at the same time that its own subjects are not encouraged to develop its resources. In 1851 the Government of the United States dispatched Lieuts. Herndon and Gibbon to Peru and Bolivia to descend the head waters of the Amazon, flowing through those countries to the main stream and thence to the ocean, to examine their capacity for internal navigation, and also the agricultural and commercial capabilities of the country adjacent. The former has returned after a most tedious and laborious voyage, mostly in canoes, of 3600 miles, and has been since engaged in preparing his report for the press. The latter officer is yet on his perilous journey. When Lieut. Herndon's Report (of which 10,000 copies were ordered by Congress,) comes to hand, we shall have the testi-

mony of an eye-witness qualified to observe; meanwhile the letters of Lieut. Maury have called attention to the vast resources of the forest, the fields, and the rivers, which the magnificent wilderness of the Amazon is ready to pour forth at the demand of commerce, just as the La Plata is commencing to do since the exclusive policy of Rosas has ceased to bar access through it to the beautiful banks of the Parana and Paraguay, which more than a thousand miles from the ocean are navigable to the craft of the enterprising trader. The following extract from the work, in reference to the Ipecacuanha country, will be read with interest:

"Villa Maria is in the midst of the great ipecacuanha region of Matto Grosso. In 1814, Francisco Real was sent to explore the diamond region of this province. But it turned out with him as I apprehend it would turn out with the pioneers of commerce now: as rich in diamonds as are the streams and gravel beds of this province, the riches of the vegetable were found greatly to exceed those of the mineral kingdom.

"This immense natural plantation includes within one field, 3000 square miles. The crop is perennial, and may be gathered the year round. One expert hand may collect fifteen pounds of this root in a day, which brought in Rio one dollar the pound. The work of an ordinary hand is five pounds the day, and the cost of laborers from \$3.40 to \$4 per month.

"Castelnau estimates that, from 1830 to 1837, not less than 800,000 pounds of this drug were exported from this province to Rio. This abundant supply brought down its price. But here is the singular feature of this trade: the produce is taken from the very banks of one of the noblest rivers in the world, and transported by mules for the distance of 1,200 miles to the sea coast, in spite of Nature's great highway.

"The ipecacuanha delights in flat or sandy soil, and is found also in great abundance on the banks of the Vermelho, the Seputuba and the Cabacal. Vanilla is also abundant. Its price, when Castelnau was at Villa Maria, was sixty cents the pound.

"But I intend to follow this interesting traveller up into the diamond country, and with him to visit the 'divide' between the waters of the Paraguay and the Tapajos.

"Ascending the Cuyabá, which is the principal Brazilian tributary to the Paraguay, about 150 miles from its mouth, you come to the flourishing city of Cuyabá, the capital of the province of Matto Grosso. It has a population of about 7000. It carries on a brisk commerce with Rio by caravans, numbering from 200 to 300 mules each. This commerce consists of hides, jaguar and deer-skins, gold dust, diamonds, ipecacuanha, and the like. The freight to Rio is \$15 the 100 pounds.

"Here, perhaps, among all the wonderful things that are found in these great river-basins of South America, is the most wonderful of them all—a city, the capital of a province larger than all of the 'old thirteen States' of this confederacy put together, and occupying on the banks of [a tributary of] the La Plata very nearly the relative position which St. Louis oc-

cupies on the banks of the Mississippi, carrying on its commerce, not by steam and water, but by the mule load, and over such a distance from the sea coast, that the time occupied by each caravan in going and returning is from ten to twelve months.

"That this state of things should, in the middle of the 19th century, be found to exist in the middle of South America, upon one of the finest steam-boat water courses in the world, whose navigable tributaries are owned by no less than five separate and independent nations, and which the 'policy of commerce' has not yet been demanded to be thrown wide open to navigation and commerce, will, in after times, be regarded as more wonderful than any other reality of this wonderful region.

"Nay, Brazil has, within a stone's throw of this very capital, and by easy portage, the navigable waters of her own Amazon; and yet so fearful has she been that the steamboats on those waters would reveal to the world the exceeding great riches of this province, that we have here re-enacted under our own eyes a worse than Japanese policy, for it excludes from settlement and cultivation, from commerce and civilization, the finest country in the world. The Atlantic slopes of South America form a country which is larger than the continent of Europe, in which there is an everlasting harvest of the fruits of the earth."

Written originally for the columns of a newspaper, the letters of Lieut. Maury are not marked with that accuracy and precision of language that might be looked for from so eminent a source, as it is by no means difficult to point out errors of fact as well as of inference, nor can it be disguised that an exaggerated expression characterizes his pages; yet with so glorious a theme anonymously expatiated upon, we can well excuse these lesser defects in the interest he excites, and for the truly national and liberal spirit he exhibits.

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*Principles of Organic and Physiological Chemistry.* By CARL LÖWIG, M. D., Ph. D., Ordinary Professor of Chemistry at the University of Zurich, &c. Translated by DANIEL BREED, M. D., of the U. S. Patent Office. Philada., A. Hart, 1853: pp. 481, oct.

After having looked over this volume, and read parts of it with attention, we acknowledge ourselves gratified with the work as a valuable accession to our chemical literature, and not the less so that the agent to whose industry we owe it, is one of our countrymen. Dr. Breed, during his sojourn in Europe, studied first at Giessen with Liebig, and afterwards with Löwig at Zurich. Whilst in constant intercourse with the latter, he conceived the idea of translating his "*Principles of Organic and Physiological Chemistry*," and executed a large portion of it. Notwithstanding the complex nomenclature and the numerous formulæ which made it a work of great difficulty, we believe the translator has been unusually successful in rendering the original into English. The book, in its style of execution, is creditable to the publisher. Let us now take a glance at its contents, and see



what Dr. Löwig has to say that can be compressed into the small space we can devote to him.

The "Principles" may be looked upon as an introduction to the "Chemistry of Organic Combinations," (an octavo of 3000 pages) which is now passing through its third edition, and is intended to explain more fully the author's views of the Philosophy of Organic Chemistry. The work is in two parts; the first treating of the constitution and formation of organic compounds, and the Theory of Radicals; whilst the second describes individual substances as classified by the author. The numerous observers and the great accumulation of facts relating to organic substances, render more comprehensive and simple generalizations necessary to classify harmoniously the phenomena of organic combinations, and to develop the laws which control their specific and complex affinities into a natural and truly philosophical system of arrangement. The work of Dr. Löwig is an attempt of this kind. He is a warm advocate of the theory of radicals, and has endeavored to harmonize the prominent facts in Dumas' doctrine of substitution and the theories of types and of nuclei of Laurent and Gerhardt therewith.

If the formula of an organic compound gives merely the sums of its elements as  $C_8 H_8 O_4$  in acetic ether, it is called *empirical*. If it groups the atoms as they are proximately arranged, as  $C_4 H_3 O + C_4 H_3 O_3$  it is then called *rational*, because it explains both the ultimate and proximate composition of the ether and acetic acid.

An organic (or compound) radical is a group of atoms combined, so as to act as a simple element in a series of compounds, of which it forms the characteristic ingredient. Thus, nitrogen in the five oxides of nitrogen, is a simple (*inorganic*) radical; whilst ethyl,  $C_4 H_5$ , is an organic radical, because the oxygen of its oxide, ether, may be replaced by chlorine, bromine, iodine etc., just as though it was a simple body, and belongs to the *primary* class. A second series results when the hydrogen of the radical is partially or wholly replaced by other elements; as when acetyl  $C_4 H_3$  becomes chlor-acetyl  $C_4 Cl_3$  by the *substitution* of chlorine; or when valeryl  $C_{10} H_9$  becomes  $C_{10} H_7 Cl_2$ . Such are called *derived* radicals. Owing to this law of substitution the derivative compounds are extremely numerous, yet, as a certain mutual relation exists among substances traceable to a common primary radical, they constitute a natural group or family. It frequently happens that two radicals unite to form a more complex one; in such cases the combining capacity is generally determined by but one of them, in which case the indifferent body is called the *pairling*, the other the *active molecule*; thus  $(C_4 H_2) \text{---} C_2 H$ , in which  $C_4 H_2$  is the pairling. The following extract will exhibit the author's view of the constitution of the most extensive or hydro-carbon class of radicals.

"By far the greater number of organic compounds are to be traced back to radicals which consist of carbon and hydrogen, and were called above *Hydro-carblys*. By an accurate observation and comparison of these in every aspect which they present, it is found that they belong to different groups,



and that those of each group mostly form an ascending series, in which each successive member contains the same number of carbon and hydrogen atoms as the preceding. But whilst the radicals of one group, in their combining proportions, are allied to hydrogen and the positive metals, those of another agree in this relation with the negative.

In all the radicals of the hydro-carbonyls may be distinguished, 1. *The Active Element or Molecule*: and 2. *The Ascending Passive Component*, by which individual members of a group are formed. In all Organic Radicals which have a positive character, the active part is H: in the Negative  $C_2H$ . The ascending passive member of the Component is always  $C_2H_2$ . All radicals which appear as simple combinations of the components  $C_2H_2$ , with the active H, or  $C_2H$ , form the class of the *Hydroisocarbonyls*, but if between the ascending  $C_2H_2$  and the active H or  $C_2H$ , another molecule of carbon enters  $=C_2, C_4, C_6, C_8$ , which may be considered as a *Nucleus*, we thus obtain the *Hydropolycarbonyls*."

The chapter on the formation of organic compounds possesses much interest. The formation of organic compounds occurs, either by the decomposition of *inorganic* compounds, 1st, by the vital action of plants with the co-operation of light; and 2d, by strictly artificial chemical means;—or it arises from the decomposition of *organic* compounds; either by 1st, electrical influence; 2d, by the effect of heat; 3d, by fermentation and putrefaction; 4th, by the vital functions of the animal organism;—or by the agency of chemically reacting matter. The following quotations from pages 42—45, will repay the reader.

"The inorganic materials for the formation of organic compounds under the influence of the vitality of plants, are carbonic acid, water and ammonia. As is known, the lower plants, as the fungi, consist of single cells, each of which represents the plant itself; by the union of these cells the cellular tissue of the higher plants is formed. These cells are the most important organs of plants; in them, under the action of the sunlight, and particularly of the yellow and green rays, the formation of the organic compounds takes place. The green parts of plants, particularly the leaves, possess the power of decomposing water and the carbonic acid of the air; consequently overcoming the original affinities by which the elements in these combinations are united, and of uniting the carbon of carbonic acid with the hydrogen of water, to form organic radicals or molecules, which either combine with each other, or unite with one part of the oxygen withdrawn from carbonic acid and water, whilst the other part escapes into the atmosphere. In most cases the volumes of oxygen gas set free are equal to the volumes of carbonic acid absorbed by the plants; and if this, in the formation of certain organic compounds, is not the case, yet the result in the entire vegetable kingdom will agree with the above. Plants prevent the accumulation of carbonic acid in the air, and mainly cause the atmosphere to remain the same. It is true the leaves absorb oxygen during the night, and evolve carbonic acid; yet the parts of plants not green receive oxygen by day and night, and thence give forth carbonic acid. But the quantity of oxygen gas which the plants use in the formation of carbonic acid, is much less than that which the green parts of the same emit by day. If the constituents of ammonia, which by continual decomposition of animal matter arises in great quantities, take part at once in the formation of organic compounds, so arise nitrogenous organic radicals. A part of the material which is necessary to the existence and growth of plants, they also obtain from the residue of organic matter already attacked by decomposition, without previous formation of

carbonic acid and ammonia. The compounds which are formed in plants, suffer, during the growth of the latter, continual changes, as well in physical as in chemical relation. The ascertaining of the conditions under which the formation of organic matters in plants occurs, as well as the changes in the same which they continually undergo, is the object of the physiology of plants, and this is the basis of rational agriculture.

Without the influence of the vitality of plants, as yet, only a few organic compounds can be produced; and it was believed, until recently, that organic bodies could only be formed through the inherent vital powers of plants. This view is completely refuted by the new researches in the province of organic chemistry, since chemists have succeeded in producing artificially complete organic combinations out of inorganic matter, and precisely such as occur in plants and animals. Thus, if sulpho-carbonic acid  $\text{CS}_2$  and chlorine be led through a glowing porcelain tube, chloride of sulphur arises, and also a combination which consists of  $\text{C}_2\text{Cl}_4 = (\text{C}_2\text{Cl})\text{Cl}_3$ . If this compound be again led through a glowing tube, it decomposes into chlorine and  $\text{C}_4\text{Cl}_6 = (\text{C}_4\text{Cl}_3)\text{Cl}_3$ . If we treat these bodies with potassa, we obtain 3 atoms chloride of potassium, and  $\text{C}_4\text{Cl}_3\text{O}_3$ , or chloracetic acid; and if we let 6 atoms potassium and 3 atoms  $\text{HO}$  act upon this, we obtain 3 atoms chloride potassium, 3 atoms  $\text{KO}$ , and 1 atom acetic acid  $= (\text{C}_2\text{H}_3)\text{O}_3$ . By the action of chlorine upon sulpho-carbonic acid, under water, we obtain a volatile crystalline body which may be considered as consisting of  $\text{C}_2\text{Cl}_4, 2\text{SO}_2$ . If this compound be overflowed with a solution of potassa, we obtain a potassa salt of an acid which consists of  $\text{C}_2\text{Cl}_3, \text{S}_2\text{O}_5$ , and if this be exposed to the current of a two-piped zinc and coal battery, by the presence of water, the chlorine is gradually replaced by hydrogen, and thus compounds are formed which consist of  $\text{C}_2\text{HCl}_3, \text{S}_2\text{O}_5$ ,  $\text{C}_2\text{H}_2\text{Cl}, \text{S}_2\text{O}_5$  and  $\text{C}_2\text{H}_3, \text{S}_2\text{O}_5$ . The substance  $\text{C}_2\text{H}_3$  is methyl, which occurs in combination with oxygen in the oil of *Gaultheria procumbens*. If, over a mixture of carbon and carbonate of potassa, heated to redness, we lead nitrogen gas, we obtain cyanide of potassium  $\text{K}, \text{NC}_2$ ; cyanogen with hydrogen gives hydrocyanic acid; hydrocyanic acid and water, by alternate decomposition, form formic acid and ammonia. Heated potassium, with oxide of carbon, gives a compound which, by being dissolved in water, forms rhodizone of potassa, and which then again separates into carbonate and croconate of potassa. Many similar formations of organic compounds out of inorganic material are known.

As has been repeatedly shown, the individual elements in the organic compounds are not united with each other in accordance with their original affinities, and the combinations owe their greater or less permanency to the greater or less chemical opposition which the organic radicals present to the materials combined with them. If this opposition be considerable—that is, if the affinity of the radical to the materials combined with it is slight, and compounds of distinguished chemical character may arise by the transposition of the individual atoms of the radical, then a great tendency to decomposition is present, and inconsiderable outward circumstances are sufficient to cause it. This inclination to the formation of compounds with marked characters, often overpowers the greatest affinities, as is the case in the forming of organic combinations from carbonic acid and water by the vital functions of plants.

If the individual atoms of compound molecules unite in other proportions to form new radicals and combinations, in which the individual components present mutually a greater chemical opposition, then the formation of these radicals and compounds results from *transposition*. If in the new compounds twice the number of elementary atoms occur as in the original, polymeric or metameric bodies are formed with them. Thus aldehyd  $\text{C}_4\text{H}_4\text{O}_2$  changes into metaldehyd  $\text{C}_{12}\text{H}_{12}\text{O}_6$ , bitter almond oil  $\text{C}_{14}\text{H}_{10}\text{O}_2$  into

benzoin  $C_{28}H_{12}O_4$ . But when the original affinities of the elements overpower the chemical character of the compounds, decomposition commences by the separation of inorganic matter. The same is complete if all the individual atoms of the compound radicals are led over into inorganic combinations. By this entire decomposition every trace of organization is destroyed. On the other hand, if the decomposition be only partial, if only individual atoms leave the organic radicals, then at once the formation of new radicals and compounds of the same takes place. Thus from ethyl  $C_4H_5$ , by loss of  $H_2$ , acetyl  $C_2H_3$  arises; if from acetyl  $C_2$  departs, we obtain methyl  $C_2H_3$ ; again, if methyl lose  $H_2$  it goes over into formyl  $C_2H$ .

The number of new compounds which may arise by partial decomposition is proportionate to the number of single atoms of which the organic radical consists, and the grade of the order to which the compound belongs. Substances which consist only of carbon and hydrogen are generally unchangeable; but if oxygen be united to hydrocarbyls and their original affinity for the elements of the radical be called out by any means, then will this cause the decomposition by forming carbonic acid or water, or both together. In all organic compounds containing oxygen, the atoms of carbon and hydrogen in the radical preponderate over the atoms of oxygen; hence also, by granting that the oxygen atoms, combined with the radicals, instantaneously receive as many individual atoms of carbon and hydrogen as are necessary to the formation of carbonic acid or carbonic acid and water, there must at once follow a separation of carbon or hydrocarbon. An instantaneous withdrawal of all the oxygen atoms never takes place, for in proportion as single atoms of carbon and hydrogen are absorbed, new radicals arise which possess affinity for the yet present oxygen, which by the original affinity of the latter must be again overcome. In combinations of a higher order, the decomposibility is mainly dependent upon the opposite chemical properties of the proximate constituents; the stronger these properties appear, the firmer are their combinations; but the less their mutual attraction is, the more complex these combinations are, the more do the single atoms seek (mainly through separation of carbonic acid and water, and in the nitrogenous of ammonia also) to unite, forming firmer and less complex compounds. To this class of substances the common constituents of the vegetable kingdom directly belong, and particularly those of the animal organization.

We have not space to dwell on the special part of the work. The following classification is adopted, viz:

1st. HYDROCARBYLS, including the *hydroisocarbyls* and *hydropolycarbyls*; the first embracing the methyl and formyl groups of radicals and their derivatives. The second comprehending four groups of radicals founded on the size of the carbon nucleus. The fifth group including the volatile oils, camphors, resins, etc.

2d. CARBYLS are hypothetical radicals consisting of two or more atoms of carbon, and are peculiar to Dr. Löwig. *Oxatyl*  $C_2$  is the radical of oxalic acid, and is a type of the class which includes most of the ordinary vegetable acids.

3d. AZOCARBYLS include cyanogen and its compounds and three analogous radicals.

4th. HYDROAZOCARBYLS comprise the *uren* compounds and the *alkalids*, of which glycocoll is a type.



5th. HYDRILS embrace the organic alkaloids, artificial and natural, and those radicals containing metals as Kakodyl, Stibmæthyl, etc.

6th. COMPLEX ORGANIC SUBSTANCES, *non-nitrogenous*, as tannic acid, bitter neutral principles, the starchy, ligneous and gummy and saccharine substances, coloring matters, etc., and *nitrogenous*, as protein substances, gelatin, animal tissues, etc.

7th. *Products of decomposition*, as ulmin, humin, etc.

In the forgoing sketch of the "Principles of Dr. Löwig, the reader may see how far he is disposed to carry the Theory of Radicals, but the book should be read to appreciate his reasons and to ascertain on what kind of evidence his hypotheses are erected. In the incipient state of all exact sciences, hypotheses must be employed; they are the scaffolding of the future system; yet the true philosopher carefully keeps in view their auxiliary nature, and avoids confounding them with ascertained truth. We advise every chemical student to read the book carefully, as it will amply repay the time so devoted, and suggest many trains of thought of use in his course of study.

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*Elements of Chemistry; for the use of Colleges, Academies and Schools.* By M. V. REGNAULT. Illustrated by nearly 700 wood cuts. Translated from the French by T. FORREST BETTON, M. D., M. A. N. S., Fellow of the College of Physicians, Philada., &c., and Edited, with notes, by JAMES C. BOOTH, Melter and Refiner, U. S. Mint, and WILLIAM L. FABER, Metallurgist and Mining Engineer. Second edition: Philada., Clark and Hesser: 1853. 2 vols. oct. pp. 1475.

Chemistry has become an all-pervading power in the economy of modern civilization; the universal hand-maiden to the arts and sciences. There are none of these so refined, so abstract or so practical, that it cannot lend its aid. It is the grand solver of knotty problems—the umpire appealed to when difficulties beset the artist and manufacturer, and in proportion as it has been cultivated, has the material progress of nations advanced. As the developer of natural resources, chemistry peculiarly addresses itself to the American people. With priceless hoards of natural wealth stored away in our mountains and vallies, with a soil and climate embracing the whole range of temperate and many tropical productions, with a people full of energy and enterprise, and demanding its employment, the United States of America should encourage the cultivation of practical chemistry by National and State patronage. The right time may not have come; yet the Government should look forward to the establishment of a National polytechnic school, wherein chemistry as a practical science should be thoroughly taught by the best teachers that a liberal remuneration will draw from our own or the laboratories of Europe; and at a price to students that would open its doors to that extensive class of young men whose means are limited, yet whose intellectual longing and talents induce to aim at a career of higher usefulness.

These reflections have been called up by glancing over the work of M.



Regnault, who, though young in years, is experienced in the paths of chemical philosophy, and a bright star among the savans of Paris. The original is in four duodecimo volumes. In its American dress the work is comprised in two large octavos. The letter press is larger and more comfortable to the eyes than the original; the numerous excellent illustrations in the latter are well copied, and altogether it is highly creditable to the publishers. The translator has executed his part thoroughly; no gallicisms or obscure phrases have been noticed. The Editors appear to have given due attention to the proof sheets. They have very properly introduced Fahrenheit numbers for temperature, and the hydrogen scale of equivalents, and with equal propriety have retained the decimal weights and measures of the original. Besides, they have added numerous foot notes, either explanatory of the text or in relation to recent observations. Several of these are valuable additions. Let us now look into the book a little closer, and see in what respect M. Regnault claims merit as a chemical writer. The first feature that strikes one is the absence of the chapters, usually preliminary in English chemical books, on the chemistry of the imponderables. The introductory chapter of 78 pages, after explaining the divisibility of matter, aggregative and chemical affinity, and the law of multiple proportion with chemical nomenclature and symbols, is chiefly devoted to a very lucid account of crystallography, copiously illustrated with wood cuts, in which the several systems are explained. This chapter will prove very useful to the student, as the importance of crystalline form, both in natural and chemical bodies, as a distinctive characteristic, is yearly increasing.

The general classification of the elements is as metalloids and metals. The whole work exhibits an unusual tendency to *apply* chemical facts to the arts, and in the description of processes it is apparent that the author is thoroughly conversant with what he describes, distinguishing which are the best, and why: again, he brings in many facts and phenomena just in the place they are naturally called up in the progress of the work:—for instance, under water, the several physical facts regarding its congelation, vaporization, condensation and solvent power, usually spoken of under caloric, are noticed. Whilst the principle of the safety tube and Woulf's apparatus, and the theory of volumes, are brought in under the compounds of nitrogen. The best modes of determining and separating many substances are specially stated, and a recapitulation of important chapters, as those of the compounds of oxygen with nitrogen, sulphur and phosphorus, is appended, of much use to the student. We observe that arsenic is placed among the non-metallic bodies along with phosphorus; and oxalic acid, cyanogen and hydrocyanic acid under carbon.

In the remarks preliminary to the metals, a considerable space is devoted to the geological structure of the earth and of metallic veins, illustrated with cuts. The physical properties of the metals, their chemical properties and relations to oxygen and other metalloids, and their alloys, are there noticed; and finally, a most interesting chapter on the general characters and formation of salts. M. Regnault gives as the definition of a salt, "every combi-

nation of two binary compounds, one of which acts the part of an electro-positive element or base, and the other of an electro-negative element or acid," thus throwing out from this category the so-called haloid salts and other binary compounds. The solubility of salts is largely spoken of and illustrated, and their behaviour under chemical treatment exposed, as regards classes.

The chemistry of the alkaline, alkalino-earthly, and earthy metals and their compounds is much enlarged on as regards potassium, carbonate and nitrate of potassa, chloride of sodium and carbonate and borate of soda, ammoniacal salts, chlorinated lime, etc., with an appendix of nearly 100 pages on gunpowder, with the details of its manufacture, testing and analysis, building materials and cements, analysis of limestones, the glass manufacture in its several varieties, pottery ware, including porcelain and stone ware, etc.

The second class of metals, including all that can readily be kept in dry air, are next described, preceded by a chapter on the mechanical preparation of ores, illustrated with cuts. In the description of these metals, the author has introduced an account of the metallurgy of the principal ones, as iron, zinc, tin, lead, bismuth, copper, antimony mercury, silver, gold, etc. Among the special notices, are the steel and wire manufacture, testing of iron ores, bronze cannon casting, assaying of silver, galvanic silvering and gilding, etc. Prof. Booth gives the process of refining gold at the U. S. Mint, by alloying with silver, and parting with nitric acid, etc., by which \$800,000 worth of gold is refined in four days.

The fourth part is devoted to organic chemistry, the introduction to which treats of Proximate and Elementary organic analysis, the establishment of formulæ, the determination of acid, basic, and neutral substances, the determination of the specific gravity and other properties of the vapors of organic volatile bodies, and the analysis of gases; the two last being very elaborate.

The author treats first of the ligneous, amylaceous, gummy and saccharine substances; then of their products with acids and under the influence of fermentation by which alcohol, ether, the compound ethers, acetic, butyric and lactic acids, &c., are included. M. Regnault was not an advocate for the radical theory, at the time he wrote on this subject. What influence Frankland and Kolbe's recent isolation of ethyl, amyl, valeryl, etc., has had on his opinions, we are not aware. Mr. Faber has given the recent discoveries of this character in several copious notes.

The vegetable acids and alkaloids, the essential oils, and the resins follow. In this connection Prof. Booth very properly refers to the important discovery of the vulcanization of Caoutchouc by our countrymen, C. Good-year, which is not noticed in the text. The empyreumatic, fatty and coloring substances, are next spoken of; then the chemistry of animal substances, the work concluding with notices of important manufactures of organic matter, including bread, brewing, cider, wine, beet sugar, cane sugar, bone black, tanning, charcoal making, and the gas manufacture.

*The Action of Medicines in the System; or "On the mode in which Therapeutic Agents introduced into the Stomach produce their peculiar effects on the Animal Economy."* Being the Prize Essay to which the Medical Society of London awarded the Fothergillian Gold Medal for 1852. By FREDERICK WILLIAM HEADLAND, B. A., M. R. C. S., &c. Philadelphia: Lindsay & Blakiston, 1853, pp. 360.

There are few subjects weighted with greater difficulties than the one discussed by the author in the volume before us. Tracing the effects of a single medicine after its introduction into the system, involves so many observations under obscure circumstances, that the most favorable results give but a very partial insight into the actual happening that has taken place. At best, therefore, the therapist can but approximate to the real history of the course of action of medicinal agents after their introduction into the stomach; yet so numerous have been the observers, so interesting is the subject, and so important are deemed the facts to the progress of rational medicine, that the accumulation of observations justify an attempt at generalizing. The work of Dr. Headland is such an one, and that it has been deemed a successful one the award of the London Society stands in evidence.

The author has arranged his views in ten propositions, (which we have not space to present to the reader,) to the support of which he brings numerous facts and arguments. The work possesses much interest, and should be studied carefully by every physician who would keep himself posted up in the literature of his profession.

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*A Treatise on General Pathology* by Dr. J. HENLÉ. Prof. of Anatomy and Physiology in Heidelberg. Translated from the German by H. C. PRESTON, A. M., M. D. Philada.: Lindsay & Blakiston, 1853. pp. 390. Octavo.

The translator has a high opinion of the merits of the author "as a distinguished medical teacher, and the best modern pathological author." The corroboration of the latter assertion we leave to the physician; yet if his translator has done him justice, we fear Dr. Henlé's style of writing is too vague and unperspicuous to render his learning profitable to his readers.

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OBITUARY.—Our last number contained an account of an act of munificence on the part of M. Orfila, by which several scientific bodies of France received donations, and which was effected on the 1st of January. It now becomes our duty to record the death of this great Toxicological Chemist and Philosopher, who died on the 12th of March, in his 70th year. A Spaniard by birth and education, he early went to Paris, in which city his great reputation as a teacher and investigator was made. Orfila was one of the Editors of the "*Journal de Chimie Médicale*," and the author of several works; yet that on Toxicology is perhaps the one upon which his reputation most depends. As a lecturer he was fluent, witty and full of anecdote, using a great variety of experimental illustrations; and being, in the words of Mr. Ince, "the *beau idéal* of a popular man," his lectures were well attended.



# THE AMERICAN JOURNAL OF PHARMACY.

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SEPTEMBER, 1853.  
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## ON THE PROGRESS OF PHARMACY IN GREAT BRITAIN.

Our last number made the readers of the Journal acquainted with the Act of Parliament, familiarly known in England by the name of the "Pharmacy Act," by which certain powers were granted to the Pharmaceutical Society of Great Britain to regulate the qualification of its members, and to assume a name or title not hitherto generally applied, which should imply a special qualification in Pharmacy. We now propose to give a short account of the circumstances out of which this measure has grown, and the agencies by which it was accomplished.

The Parliament of Great Britain is the supreme power of the land, the power to which all classes appeal to remedy great evils, and whose mandates are universally respected. To obtain an Act of Parliament, where the powers asked for have a bearing on several classes of the community, requires great perseverance and influence on the part of its promoters, as the Bill is subjected to the severest scrutiny both by the legislative bodies, and the parties who will be influenced or imagine they will be affected injuriously by it.

In the year 1843, soon after the origin of the Pharmaceutical Society, the Council made application and obtained a Charter, which granted the Society certain corporate privileges, and publically acknowledged the chemists and druggists as a distinct class of the community, yet gave them no restrictive power in regulating the qualification of the practitioners of pharmacy. From that time to the granting of the Act just obtained, the Society have anxiously sought to obtain additional powers. In 1846 a bill was drafted and discussed by the Council, but little progress was made until after the election of Jacob Bell to Parliament. The first aim of the Council was to obtain an Act clothing the Society with authority sufficiently ample to compel all future "chemists and druggists"



to undergo an examination, and thus obtain a license to practice before opening stores. They also sought powers as an examining body, agreeing in that case to abandon the educational functions which the Society had voluntarily performed from its commencement, leaving the candidates at liberty to obtain the requisite knowledge where they pleased, provided they were able to pass the examinations in chemistry, materia medica, pharmacy and toxicology. A Bill was introduced by a motion of Mr. Bell, on the 12th of June, 1851, and read for the first time June 13th. On the second of July Mr. Bell moved a second reading, and supported the motion by a speech, embracing an historical account of the circumstances which attended the rise and progress of the body asking for the Act, going back to the early difficulties with the apothecaries before the Charter in 1815, and showing that the object of the bill was not to create a monopoly, or to interfere with the parties at present engaged in business, or with any of the medical corporations, but was intended to improve the qualification of the practitioners of Pharmacy, and thus eventually raise the status of the whole pharmaceutical profession.

Several objections arose on the part of members not conversant with the object of the bill, in reference to the extent of power delegated to the Society; whilst others, among whom was Mr. Wakley of the *Lancet*, advocated it, when it was suffered to be again read, on condition that final action should not be pressed at that Session.

It was soon found in its progress before the House of Commons, that opposition would be made from various sources to the bill as introduced, and that the powers aimed at, and the privileges conferred, would have to be greatly curtailed. The druggists and chemists of Edinburgh held a meeting to consider the bill, and required that, so far as Scotland was concerned, the Examining Board should be appointed by members of the Pharmaceutical Society resident in Scotland. At another meeting held at Aberdeen, the chemists and druggists agreed in this suggestion, and expressed a "desire that Scotland might participate in the benefits of the Bill." The Liverpool chemists suspecting that "an infringement of their privileges was contemplated," opened a correspondence with Mr. Bell, and appointed a committee to watch the progress of the measure. A member of

the House, Mr. Lacy, attempted to impede its passage by offering a motion, that it be made the law of the land, that all medicines vended by apothecaries and druggists for external use, and all poisonous liquids, like laudanum, for either external or internal use, be sold only in square or polygonal-sided bottles, whilst internal medicines, not poisons, should be vended in round or oval bottles. The proposition to insert this clause called out the action of the Council of the Society, who opposed it as injudicious and destructive of its own object. Some of the strongest opposition to the bill arose from the idea that the chemists and druggists were aiming secretly at medical practice, so as to conflict with apothecaries or general practitioners; whilst, on the other hand, opposition was manifested by members of Parliament, on the ground that the bill was striking at free trade in drugs and medicines by creating a trading monopoly. The Royal College of Surgeons of Glasgow, and the Faculty of Physicians and Surgeons of Edinburgh, sent petitions opposed to the bill, on the ground of interference with their rights of licensing in Scotland, and asking Parliament to confer the same licensing power, asked for in the bill, on their bodies, that they might individually examine the chemists and druggists in Scotland.

On the 12th of February, 1852, Mr. Bell again moved the consideration of a Pharmacy Bill, which he stated was similar to the one brought forward at the last session, with some alterations to meet the objections of some of its opponents, which was read, and its second reading fixed for the 25th of February. A change of Ministry having occurred, the second reading was postponed till March 17th, when Mr. Bell presented petitions from the Royal Colleges of Physicians and Surgeons in its favor, and a petition signed by 150 eminent medical practitioners in London, and numerous others over the country. He then stated the merits of the bill as then proposed, explained the clauses on which doubts were offered, and finally moved its second reading, which, after some opposition, was agreed to, and the bill referred to a select committee, consisting of Jacob Bell, chairman, Mr. Ewart, Mr. Bouverie, Sir William Gibson Craig, Sir Henry Willoughby, Mr. Wakley, Mr. Deedes, Mr. Hindley, Mr. Jackson, Mr. Farrar, Mr. Wyld, and Lord Burghley.

This committee met on the 30th of March, on the 2d, 22d, 26th,

27th, and 29th of April, and on the 7th and 12th of May, to examine witnesses, and on these occasions examined thirty witnesses, among whom were some of the most distinguished physicians, surgeons, apothecaries and pharmacutists of Scotland and England, and also Prof. Kopp, of Strasburgh, and Dr. Hamburg, of Stockholm. The printed minutes of evidence taken by the committee cover 210 folio pages, embracing more than 2850 questions and answers. The distinguished character of the parties concerned, the fair and dispassionate manner in which the examination was conducted, and the great variety of facts (statistical and others) and opinions which it elicited, render this parliamentary document a valuable addition to the historic literature of British pharmacy. The committee reported on the 21st of May, and the report was ordered to be printed.

We give below a few extracts from the evidence of several of the witnesses :

The mass of testimony is so great, and the witnesses so numerous, that in the small space we can allot to the extracts, but a few detached passages can be given, yet they will be sufficient to exhibit the aims and spirit of the parties under examination :

JAMES ARTHUR WILSON, M. D., Senior Physician to St. George's Hospital.

"7. Do you consider that it is as necessary for the person who compounds the prescription to be educated in pharmacy, as it is for the physician to be educated in the practice of medicine, and the surgeon in surgery?—To refuse assent to that proposition would be to deny physic altogether. I cannot fancy a greater satire on physic than by declaring that the means we employ were of little or no consequence.

"8 Then you consider it may be laid down as an axiom, that pharmaceutical chemists ought to be examined by some Board before they undertake to compound the prescriptions of medical men?—Certainly ; they should be proved competent.

"52. Would you, as a physician desirous that your patients should be protected from ignorant persons compounding your prescriptions, feel that there was a security conferred upon you in that respect by the power that the [Pharmaceutical] Society is applying for? I should feel it a very great comfort, and a very great relief to my conscience, if I knew that that Society educated and examined men for pharmaceutical chemists. I and every physician must feel humiliation, more or less, in knowing that our prescriptions are left on the table, and go out, it may be, to where the butler or the lady's maid has a friend around the corner.

"143. I understand you to say that you are not in the habit of recommending your patients to take your prescriptions to any particular dispensing chemist?—Never.

"144. But would you feel the same delicacy in recommending your patients to take a prescription to a member of the Pharmaceutical Society?—If every chemist was a member, I should say "take it anywhere ; you are safe."

"145. But if they were not all members, would you feel any delicacy in



recommending them to take it to such a member of the profession, because all you want is to secure its being compounded by a person of education and competence?—There might be a person in the next street who was a chemist by instinct, by taste, who might be equally competent with a member of the Pharmaceutical Society, and I should feel a delicacy certainly in interfering.

"146. Would you feel less delicacy in saying to your patients, 'Take my prescription to one who is a member of the Pharmaceutical Society,' than you would in interfering now?—Certainly.

"175. There is another point to which I will call your attention with respect to the effect of the Pharmaceutical Society, assuming it to exist with the privileges as stated; would it have any effect upon the other branches of the profession in this way;—would it by any possibility, induce chemists to become practitioners in their own houses?—I believe they would become less and less practitioners over the counter, as it is called. They are practitioners now to a great extent in many instances, and very reprehensible the practice is; and by none, I believe, is it more deprecated than by the leading members of the Pharmaceutical Society. But I believe if their status was raised as pharmaceutical chemists, if they were recognized under an Act of Parliament as a scientific body, with a real chartered and Parliamentary existence, they would be less inclined to meddle with the practice of Physic, to tamper with what they know but little or nothing about."

"176. In fact, it would secure a division of labor?—I believe so, though not entirely; because if a groom, for example, had swallowed 'boot-top stuff' or 'stuff for cleaning saddles,' by mistake, and then his friend rushed into the chemist's shop and said, 'Give me an antidote for oxalic acid,' how could it be possible to refuse it? or how would it be possible, on Saturday night if a farmer's man asked for a good strong dose of physic to take the next morning, to refuse that?

"177. Then, in point of fact, you consider that, more or less, it is inevitable the chemists and druggists should practice physic?—To that extent inevitable."

JOHN F. SOUTH Esq., President of the Royal College of Surgeons, &c.

"202. Do you think that a division of labor is desirable in the profession?—Certainly.

"203. And that advantage would arise from a body being recognized by law as representing the department of pharmacy?—Certainly.

"204. Do you think that, by that means, discoveries in pharmacy and improvements in preparations would be more to be expected, than would be the case if the persons practising pharmacy were also medical practitioners?—Yes, because such persons would be able to give more time to it than medical practitioners usually have the opportunity of doing.

"206. Do you consider that the state of the Law in reference to pharmaceutical chemists is satisfactory at the present time, seeing that any person, whether he is a tinker, or a footman, or a coachman, whatever he may be, if he can get money enough to start a little shop, can assume the title of pharmaceutical chemist?—Certainly not.

"207. Do you think it the duty of the Legislature, in cases affecting life and health, to have a supervision over matters of that description?—Yes, I do.

"208. Have you heard of the proceedings which have been taken by the chemists during the last 11 years, with the view of raising their qualifications and becoming an educated body?—Yes, I have.

"209. Do you generally approve of those proceedings?—Yes, very sincerely; very fully.

"210. Do you think it desirable, fair, and proper that the chemists should have the management and examination of their body?—I think so."



MR. JOHN SAVORY, Pharmaceutist, of Bond street, London.

"471. Do you think that the fact of knowing that no examination is required, causes apprentices to pay very little attention to the study of their business?—I am quite sure of it; I have had pretty well thirty years experience, and from all I can learn, the want of an examination in this country for pharmaciens, or for chemists and druggists, is the cause of young men, during their apprenticeship, paying little or no attention to their business.

"472. Supposing an apprentice were desirous of informing himself respecting his business, was there before the establishment of the Pharmaceutical Society any definite course of instruction?—None whatever till the establishment of the Pharmaceutical Society.

"474. Do you find any difficulty in obtaining competent assistants?—I find the greatest difficulty in obtaining them.

"475. Have you frequently had occasion to examine 20 or 30 when you wanted one, before you found one that was fully qualified for his business?—I have lately been in want of two assistants, and I have had 40 or 50 applicants, and out of those I found very few who were acquainted with the rudiments of pharmacy or chemistry; they could hardly read a Latin prescription; that is to say, if it was anything out of the common way. I never take a young man into my house without his passing an examination; it is by no means a severe one. I put prescriptions before them, and if they cannot read those Latin prescriptions, of course I consider at once that they are not qualified to come into my house. I do not, however, rest satisfied with that. I ask them upon articles in those prescriptions. As, for instance, I believe in one of them there is muriate of soda; I say, 'Pray, can you tell me what is muriate of soda?' The reply is 'It is muriate of soda.' But what is it; can you tell me any thing about it; what is its present chemical name? 'Muriate of soda,' that is all that I can get out of them."

SIR BENJAMIN BRODIE, Bart.

"718. Do you consider that division of labor in the profession is desirable; and that there should be a class of persons devoting their almost exclusive attention to chemistry, and the manufacture of medical substances?—Not only desirable but very important.

"721. Do you think that that class of persons ought to pass an examination?—It seems very desirable that they should.

"763. A doctor of medicine is examined previously to obtaining his diploma; and a surgeon is examined previously; why should not a chemist be examined previously?—Exactly; and I think that those examinations would be more useful in fact than the examinations of medical practitioners, because the candidates cannot be crammed for them; whereas candidates get crammed for medical examinations to a very great extent, especially for those of the Apothecaries company."

[Sir. Benj. Brodie gave strong testimony in favor of the Pharmaceutical Society, and advised that they should have power to enact their own by-laws, subject to the revision of the Secretary of State.]

MR. PETER SQUIRE, Pharmaceutist, of Oxford St., London.

"784. At the time you were educated in business was there any regular method of educating pharmaceutical chemists and druggists?—They were regularly apprenticed and premiums given; and it was necessary that they should have served seven years apprenticeship at that time.

"785. But was there any recognized method of teaching them Chemistry, Pharmacy, *Materia Medica*, and so on?—None whatever; they picked up what they could by becoming at first mere scrubs, and then elevating themselves from being mere scrubs by becoming assistants.

"787. Where they instructed in the theory of chemistry?—Not in the least.

"788. If a young man had devoted much of his attention to chemistry and

botany, would he have been cautioned against neglecting his business?—Yes; I acquired my knowledge of botany chiefly on Sundays. I had no theoretical instruction but what I got myself from books.

“795. Are there a great number of persons who call themselves chemists without possessing the least education whatever in chemistry and pharmacy? I should think that that is a lamentable fact.

“796. Have you been induced to support the Pharmaceutical Society with a view of raising the standard of qualification of chemists and thus benefiting the public?—Entirely with that view.

“797. You have been an examiner, I think?—I have, from the first establishment of the Society.

“800. Do you think there has been an improvement in qualification since the Pharmaceutical Society was formed?—I think a very great improvement.

“809. Can you state the nature of the examination?—The nature of the examination is simply this: a young man is called upon to read prescriptions, with their terminations, and not in short dog Latin. They are also called upon to translate these prescriptions, and to translate them not only literally but in an elegant manner. They are then asked if they know the nature of each of the ingredients in the prescriptions, and to give a reason why such and such things should be put together, and what chemical decompositions take place in the different admixtures; in short to form a judgment on the prescription as to whether it is a chemical or unchemical one, in order that they may be able to give a hint to medical men hereafter, if they are not up to chemistry, that they may set themselves right in future. I think that very necessary, because I have frequently found that medical men were not so well versed in pharmacy and chemistry as our body; and I think that those hints are very valuable to medical men, and by those means one profession assists the other. Then we examine them upon *materia medica*, and the knowledge of the quality and action of the drugs. They are called upon to state what part of a plant they have before them; to what natural order it belongs; what are its uses in medicine and what are its particular properties. They are not examined beyond stating what the doses of those medicines are. They are also examined chemically as to the chemistry of the pharmacopœia. They are examined also upon toxicology and botany; and I think when I have said that I have stated all our examination.

“810. By whom are the examiners appointed?—The examiners are appointed by the Council.

“811. How many examiners are there?—Eight I believe.”

MR THOMAS HERRING, wholesale druggist, London.

“824. You have been many years a wholesale druggist?—I have been in business about 43 years.

“826. Does your business bring you in communication with the chemists and druggists throughout the kingdom?—It brings me in contact with the chemists in London and in the provinces; and in Scotland and in Ireland; I have visited them and know them personally.

“829. Do you consider from what you know of the body of chemists and druggists that they are properly qualified for their business?—Not generally; a very great deal of mischief arises from want of knowledge; for instance, take any gentleman who is a qualified person, and knows his business, and he would not buy any thing but what is of proper quality; but a great many of those who purchase drugs are men not educated, by which means a vast quantity of medicines are sold of an inferior quality.

“831. Are those persons competent to judge of the quality of the drugs which you sell?—Certainly not; and moreover, when they order an article which is poison or a medicine of stringency, not knowing the Latin name, require the English name also.

"833. Does that occasion the circulation in the market of a great many drugs of so inferior a quality, that they would not be received by any educated chemist?—Yes; those who do not know the quality of drugs, are sure to be imposed upon, because the most common drugs bear the best profits.

"840. Do you think that the ignorance of so many persons, who call themselves chemists, causes the circulation of larger quantities of inferior drugs than otherwise would take place?—I do. If a man is educated we should not show him the inferior drugs, which a person who does not know the article would select in preference, on account of the low price.

"852. Is it your practice to buy these adulterated drugs?—We do not buy them largely; we are compelled to supply an article of that kind when ordered. A customer comes in and asks for Scammony at a low price; this article [showing a specimen] is produced and he buys it, but we do not keep it in stock; but a man who was educated at all, would see himself that it was impure.

"853. You are obliged to yield to the demand for such drugs as are asked for by your customers?—We are forced to keep them, but we never use them in preparations.

"857. Have you found more difficulty in satisfying your customers since the establishment of the Pharmaceutical Society; have they paid more attention to the quality of the drugs?—Yes, it has been quite a stimulus to all them who have joined the Society.

"862. Is it your opinion that it is desirable to prohibit the sale of drugs by persons not druggists?—That is my idea; I have thought for a considerable length of time that Government ought to appoint a man to look after the drugs; there ought to be a man who understands his business to go round to the different shops and investigate the drugs. You see what a great improvement has taken place with respect to the importation of drugs into the United States of America; if an article is imported there now, the moment the vessels have landed the packages, they pull them open if there is any suspicion of their being bad, and if they are bad they are seized; consequently the trade dare not send a bad article to America now; it would be seized.

"865. Is the medical inspector attached to the Custom-house?—The medical inspector is attached to the custom house, and no medicines are landed without he sees them."

MR. GEORGE WALTER SMITH, Secretary of the Pharmaceutical Society.

"935. You have been for many years in the drug business?—For upwards of 30 years, both wholesale and retail, in town and country.

"936. You were connected with the Pharmaceutical Society at the time of its formation?—I was.

"944. But was the primary object of the Society education?—Yes; to educate and qualify the body so as to render them efficient servants of the public.

"949. Do you remember the number of members who joined during the first year?—I have a statement here of the numbers in the several years. [This is extracted from a table exhibiting also the number of persons who left, and who were admitted into the Society during the several years indicated, but which is omitted.]

Years.	Members.	Associates and Apprentices.	Years.	Members.	Associates and Apprentices.
1841	668	266	1847	1678	1159
1842	1658	2313	1848	1634	1013
1843	1640	2079	1849	1561	865
1844	1574	1706	1850	1550	814
1845	1691	1475	1851	1485	735
1846	1673	1436			



"975. Was it found absolutely requisite to establish a model school of pharmacy to indicate the course of study that young men ought to go through?—It was necessary not only to institute a system of education, but in the hope of bringing forward educated men to become teachers.

"976. In the establishment of this school, has every thing been done which the experience in other countries, and the teachers in this country, could suggest, to make the education as complete as possible?—I apprehend so. We have established lectures in chemistry, materia medica, pharmacy and botany; and we have established a laboratory which is well attended.

"977. Have you a statement of the number of pupils who have attended?—Yes; the number of pupils who have attended the laboratory are here stated, [with the receipts and expenses during several years.]

Years.	Pupils.	Fees received.	Professors' fee.	Drugs, chemicals Fuel, Coal, and apparatus.	Gas & Coke	Total Expenditures.
1844-45	10	\$1638.00	\$ 819.00	\$ 891.00	\$191.00	\$1951.00
1845-46	27	2016.00	1008.00	1056.00	250.00	2621.00
1846-47	27	2226.00	1113.00	1207.00	345.00	2715.00
1847-48	27	2349.00	1174.50	978.00	201.00	3212.00
1848-49	31	2515.00	1257.37	1023.00	175.00	2826.00
1849-50	28	2648.00	1324.25	1185.00	215.00	3091.00
1850-51	37	3497.00	1698.37	1289.00	251.00	3605.00
Total,	187	\$16,889.00	\$8,394.49	\$7,629.00	\$1628.00	\$20,021.00

"979. Have you the number of pupils who have attended the lectures?—Yes, this is the statement [as condensed from the original.]

Subjects.	Professors,	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851
Botany,* . . . . .	Dr. A. T. Thomson, F.L.S.	42	30	65	62	75	73	55	42	48	44
Chemistry, . . . . .	George Fownes, F. R. S.	71	66	49	47	48	—	—	—	—	—
Organic Chemistry, . .	" "	—	—	—	59	45	33	—	—	—	—
Materia Medica, . . .	Dr. J. Pereira, F. R. S.	75	44	49	56	46	46	37	44	44	88
Pharmacy, . . . . .	Theophilus Redwood.	78	57	49	54	47	—	—	—	—	—
Chemistry & Pharmacy,†	" "	—	—	—	—	—	54	46	42	47	85

"984. Have you a statement of the total expenditure of the Society?—I have, both of the receipts and expenditure in round numbers.

*Receipts and Expenditures of the Pharmaceutical Society of Great Britain from the 1st of June, 1841, to the 31st of December, 1852.*

Subscriptions, - - -	\$177,975	Investments, - - -	\$44,050
Donations, - - -	14,540	Printing and delivery of journals, 49,130	
Entrance fees, - - -	3,755	Lectures and other educational purposes, - - -	59,155
Lecture and Laboratory fees, 22,160		Library, Museum and apparatus, 10,795	
Interest of money, - - -	9,315	Charter, arms, and certificate of membership, - - -	4,885
Balance, - - -	2,010	Examiners, - - -	270
	\$229,755	Officers and servants, - - -	24,785
		Rent, rates and taxes, - - -	18,325
		Office sundries, - - -	12,900
			\$224,275

"1034. Does your Society propose to grant a certificate of qualification without a fee?—No; that I apprehend will be arranged in the bill.

\* Dr. Bentley assumed the Chair of Botany on Dr. Thomson's death in 1849.

† Mr. Redwood lectured on both Chemistry and Pharmacy after Mr. Fownes' death.



"1065. Do you know what fee they propose to charge for the certificate of qualification?—There will be three examinations, and the total will be about 10 guineas (\$52.50.)

"1066. Then it would be necessary for a young man who wished to assume the title of 'Pharmaceutical Chemist,' according to your present notion, to pay 10 guineas?—Yes, for three examinations.

"1067. He could not be registered without paying that?—Not under the Bill.

"1069. Do you know how many chemists and druggists there are throughout the kingdom?—About 5000, and 5000 assistants.

"1092. Of course you have held communications, as the Secretary of the Society, with the chemists and druggists throughout England?—I have.

"1093. Have you found that the standard of education has been much improved since the establishment of the Pharmaceutical Society?—Yes, I have the evidence of that around me, in the young men who attend the lectures, and receive the instruction of the laboratory.

"1094. Do you know anything of the history of chemistry at the present moment?—I consider it to be very much on the advance with regard to our own body, not only in the education which we give in the institution, but in the inquiry and application exhibited by the young men in the country, who, anticipating an examination, are preparing themselves by careful study during their apprenticeship."

[To be continued.]

In the course of the evidence taken before the committee, it soon became evident that the exclusive powers at first sought by the Society could not be obtained, and that the bill, even in its altered condition, would not pass the House without a further curtailment of the powers granted. The bill was altered, so that instead of the penalty applying to the *act of unqualified persons carrying on the business of chemist and druggist*, it was rendered applicable only to the *assumption of the title of "pharmaceutical chemist," or "pharmaceutist," by unqualified persons*; or to the false declaration of membership in the Society. The plan of general registration was abandoned, and the registration applied only to members of the Pharmaceutical Society, and such other chemists and druggists as may submit to an examination by the Examining Board appointed by the Council. In fact, from being "a measure providing for the registration of all chemists and druggists, and the examination of all who may in future assume a name or title, &c., implying qualification in Pharmacy, it was reduced to an act for confirming and amending the charter of incorporation, and conferring an honorary distinction on the members of the Society." Instead of compelling qualification in *all*, it merely *requires* qualification of those who may choose to adopt the title, thus leaving it optional with dispensers of medicine, whether they adopt the title or not. In this modified form (see

page 312 of this volume) as presented by the committee, the Act passed the House, and subsequently became the law of the land.

Opinions being variable among the members of the Society as to the advantages likely to arise from the Act, it was determined at a meeting of the Council, held on the 19th of July, 1852, to call a special General Meeting, for the 4th of August, "to discuss the provisions and operation of the Pharmacy Act, and to consider the steps which it may be expedient to take in reference to it."

In accordance with the call, the meeting was held. Mr. Edwards, of Dartford, moved, "That in order to bring the Pharmacy Act into more extensive and immediate operation, it is desirable that the Pharmaceutical Society should include among its members all duly qualified dispensing Chemists throughout the United Kingdom." The resolution was carried unanimously.

Mr. Orridge moved, "That this meeting recommends the Council to adopt a liberal constrution of the terms of the Act in regard to the admission of Chemists in business on their own account before the passing of the Act," which was carried unanimously.

Mr. Morson moved, "That the Pharmacy Act having been passed for the purpose of elevating the character and status of the Pharmaceutical Chemists of Great Britain by means of improved education, this meeting considers it of the highest importance that the Members of the Society should afford every encouragement and facility to their Assistants and Apprentices for preparing themselves to pass the examination," which was also carried unanimously.

Mr. Bell received a vote of thanks, for his "energetic exertions in promoting the passing of the Pharmacy Act through Parliament."

Having obtained the Act, partial as it was in its powers, the next step was to decide on the plan for carrying it into effect so as to accomplish the best results. Among the numerous members of the Pharmaceutical Society, scattered over England and Scotland, men of all grades of liberality and ability exist, and it was not to be expected that a measure affecting the interests of the whole profession should pass into a law without being met by opposition, often frivolous, sometimes serious. Perhaps there is no country where the persons who retail drugs and dispense medicines

—taking all grades—include such various degrees of qualification, from the two-penny grocer to the scientific chemist. As a class, however, the very nature of their business has given them a favorable *prestige* in public opinion. This is manifest by the numerous instances where responsible public service is required of chemists and druggists; yet a large number of inferior practitioners exist, who reflect no credit, but cast, rather, a shadow on the profession. Abundant testimony was given in to the Committee of Parliament, proving that a decided improvement had taken place in the cities and larger towns in the general manner of conducting business since the establishment of the Society, and the circulation of its Journal. The example of the few has, by a kind of catalytic action, infused ideas of reform among the many—the motives often not higher than competition. A better understanding is growing up with the medical profession, who, seeing the disposition of the better class of members to refrain from medical practice in accordance with the rules of the Society, encourage them in their endeavors after a better education. The old jealousy among chemists is disappearing, and union of effort for mutual aid gradually taking its place.

According to the terms of the Act its provisions were to go into effect a year from the date of its passage. As this period approached, the chemists and druggists, not members, everywhere exhibited signs of interest in regard to the influence of the Act. To meet this interest, and to induce as many as possible of the better class of chemists and druggists, not members, to join the Society, and thus swell its influence, two by-laws were passed by the Council, and adopted at a special general meeting held Dec. 8th, 1852, which gave those members of the profession who commenced business between the date of the Charter (1843) and the Pharmacy Act, (June, 1852,) liberty of admission without examination, but by certificates of qualification, signed by six members, and all *associates* of date prior to June, 1852, the same privilege.

To facilitate the communication of provincial members with the parent Society, it had long been usual to communicate through Local Secretaries, who often held but a semi-official position. The importance of a more methodical arrangement of the Local Secretaries attracted attention, and it was designed to have such an official agent in every town, in communication with the General Secretary.



For several months previous to March, 1853, a committee of Council was engaged in preparing a set of by-laws to carry out the provisions of the Pharmacy Act. This duty called for the wisest judgment of the Council, to so work the by-laws that the Act might be rendered most effectual. As the by-laws had to be adopted at the general meeting in May, before their approval by the Chancellor of the Exchequer, Lord Palmerston, their construction became extremely important, involving, as chief points, "to fix the rate of subscription and the amount of fees; to define the duties of the officers of the Society; to regulate the examinations; the times and manner of holding the meetings," &c., so as not to conflict with either the Charter or the Act. In the discussion of the by-laws none excited more interest and feeling than that relating to the payment of registration fees. As soon as it was understood that the standing of pharmacutists was to be established by a registration, the idea of making it supercede membership occurred, and was urged as an oversight in the framers of the Act, which could be taken advantage of by all who desired to avoid the annual contribution. Among those who took this view, Mr. Bastick and Mr. Dickinson, editors of the *Annals of Pharmacy*, were the most prominent, and in the columns of their journal openly encouraged disaffection, declaring themselves to be the advocates of a numerous class of country members. These gentlemen appear to have been mistaken in their views, as the charter grants the Society liberty to regulate its acts by by-laws. In the by-laws it is made optional with the applicant for registration whether he pays the fee and is placed on the perpetual register, or by paying an annual fee, is put on the annual register.

In accordance with previous notice, a stated general meeting of the Society was called for the 11th of May, to consider and confirm the by-laws as elaborated by the Council, preliminary to their being submitted to the Secretary of State. When the proposition to read them by sections was made, it was negatived, and decided to consider them as a whole. After being read, it was moved that "the by-laws now read be approved and confirmed as the by-laws of the Pharmaceutical Society." After much discussion of certain clauses, and various motions put and lost, the original motion of Mr. Hooper was carried *nem. con.*

The by-laws thus approved were forwarded to the Secretary of

State for his approval. Meanwhile, the few persons who had constituted themselves a secret committee to oppose the by-laws, having utterly failed to make any impression in the special general meeting, the only legitimate tribunal for such an appeal to be made, so far lost sight of their duty as members, where the majority should rule, as to make a special appeal to Lord Palmerston (who then had the by-laws under consideration) against them, thus bringing the disrepute of internal disagreement on the Society. In consequence of this want of unanimity, Lord Palmerston, who had received the by-laws as approved by the Society, on the 11th of May, informed Mr. Bell that, in consequence of the opposition to the by-laws, indicating a disagreement among the members, he would require more time to consider them, and requested a written statement in support of the views of the Council. A memorial was duly sent, signed by the president, vice president, and nineteen out of twenty members of the Council, when, on the 17th day of June, the Secretary of State returned the by-laws duly confirmed according to the Act.

Such is a succinct history of this great movement, from its origin to the accomplishment of its object, so far as gaining recognition as an educated body by Parliament was concerned. The real process, however, is but just begun. English Pharmacy has gone into its *pupa* state; the *chrysalis* of the future pharmaceutical body of Great Britain is now in process; years of quiet, undemonstrative progress will have to be gone through by the mass, until it has acquired that form and those elements which will fit it for bursting forth from the cocoon in which ignorance and long usage have enveloped it, that it may expand into the beautiful proportions and assume the extended powers with which science will have endowed it.

W. P., JR.

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#### DECOLORIZING PROPERTY OF THE ESSENTIAL OILS.

By JOHN L. PLUMMER, M. D., Richmond, Ind.

On recently opening a bottle of oil of lemons, I was surprised to find the inner third of the cork whitened, as if by the action of nitric acid. I could account for this appearance only on the supposition that the cork had previously been exposed to that acid; or that the oil was a factitious compound generated by the action

of nitric acid on some other substances, and still retaining acid enough to affect the cork.

On boiling some of the whitened portion of the cork in distilled water, and adding solution of sulphindigotic acid, the blue color was quickly discharged. I tested for chlorine, but no indications of its presence appeared.

Although there seemed to be sufficient evidence of the existence of  $\text{NO}_5$  in the boiled liquid, I could not but hesitate before I adopted this conclusion, especially as I observed, while cutting the cork, that it retained nearly its original elasticity or toughness. I found also that the oil readily bleached the blue solution, and at the same time exhibited no acid reaction with blue litmus paper. The conclusion appeared unavoidable, that the essential oil discharged the color from both the cork and the indigo solution.

Here a new inquiry was opened to me. Was this bleaching property possessed by essential oils generally? I subjected the sulphindigotic acid solution to the action of twenty-two volatile oils. With the exception of two, *they all completely discharged the color of the indigo*. The oils tried were:

Ol. Limonis,	Ol. Tanaceti,	Ol. Bergamii,	Ol. Sabinæ,
Fœniculi,	Piperitæ.,	Cari,	Hedeomæ,
Juniperi,	Rorismarini,	Lavendulæ,	Gaultheriæ,
Terebinthinæ,	Chenopodii,	Caryophylli,	Sassafras,
Anisi,	Cinnamomi,	Origani,	

and that of fir and of hemlock.

Of these the oils of winter-green and sassafras produced the least impression on the  $\text{AnO}_2 \text{SO}_3$ ,\* but even they ultimately discharged the color; all the rest speedily dissipated the blue, so as to leave the liquid limpid and colorless as water. The oils of tansy turpentine, juniper, lemons, fir, hemlock, and peppermint, were among the most active. Two or three drops of the oil of tansy, quickly bleached a test-tube full of the blue reagent. This, like most of the oils, discharged the color without the aid of heat, simple agitation for less than quarter of a minute being sufficient. Some of the more obstinate would bleach little more than equal parts of the colored liquid, and then only by the assistance of heat. The oils in some cases became somewhat milky after agitation with the

[\* This formula for sulph indigotic acid represents it as sulphate of the deutoxide of Anyle;  $\text{Anyle} = \text{An} = \text{C}_{16}\text{H}_{15}\text{N}$ .—EDITOR.]



$\text{AnO}_2 \text{ SO}_3$ , and remained so; other oils remained perfectly transparent from the beginning.

It will be perceived that both classes of oils, those containing no oxygen and those into which that element enters as a constituent, are enumerated among the bleaching agents. As commercial oil of turpentine is more or less oxygenated, I attempted to introduce pure camphene into the blue solution. Into a small retort I poured about half a drachm of very limpid spirits of turpentine, with twenty or more times the quantity of distilled water. The retort was then exposed to the vapor of boiling water in one of the small holes of the Beindorf's apparatus, and the neck introduced into a test-tube containing the blue liquid, so far as to close the mouth of the tube. The extremity of the neck of the retort scarcely reached the surface of the blue liquid. In a few minutes, without any perceptible distillation, the blue liquid became as colorless as water, the vapor of camphene having apparently been absorbed by the fluid in the test-tube. Citrene, obtained in like manner, acted as the camphene did.

Balsam of copaiva, without heat, changed the color of its own bulk of sulphindigotic acid in solution to a mere shade of greenish blue. The active principle in this case was probably the volatile oil of copaiva.

A *drying* oil was now tried. Linseed oil in the proportion of about eight parts to one of  $\text{AnO}_2 + \text{SO}_3$ , caused the blue color to abate, and by agitation and heat the depth of color was still further diminished, but the blue tinge was not wholly dissipated until the next day, when every vestige of color was removed. The oil appeared like yolk of egg.

Glycerine (a few drops to the test-tube one-third full) instantly disappeared in the blue solution, and reduced it to a very pale greenish-blue color.

Camphor, boiled several minutes in the indigo solution, made no perceptible change in its color.

Tincture of camphor, shaken with the blue liquid, converted the blue to a greenish hue. The blue liquid diluted to the same extent by water or alcohol retained its blue tint. After two days standing without change, both camphorated mixtures were placed a few hours in the sun: the result was, the liquid in both tubes became completely bleached.

It appears to me that this reaction of the oils upon  $\text{AnO}_2 \text{SO}_3$ , may be profitably appropriated in Pharmacy. For example: *Oil of Savine is liable to be adulterated*. I find on testing it with  $\text{AnO}_2 \text{SO}_3$ , that the blue color is not discharged except by a large quantity of the oil; and to effect the bleaching quickly, heat is required; and further, that the oil remains clear.

On the other hand, the oils of juniper, fir, and hemlock, (the articles most likely to be chosen to adulterate the oil of savine,) bleach a very large proportion of the blue liquid. It is done quickly, heat is not required, and the oils become milky.

### *Black and White Mustard.*

*Sinapis nigra* yielding a volatile oil belonging to the third class, and *Sinapis alba*, according to our authors, furnishing no essential oil, it became an interesting question to know what effect the two species of seeds would produce upon  $\text{An}_2 \text{SO}_3$ .

One scruple each of sound black and white mustard seed was triturated to the same degree of fineness, and emptied into equal portions (test tubes nearly full) of the blue solution. Both portions of the liquid were instantly affected. The contents of the tubes were shaken together, and then filtered. The filtrate of the black mustard mixture was of a very pale *yellowish-green* color; that of the white mustard of a very pale *pea-green* color. These

[In reflecting on the curious results detailed by Dr. Plummer, it has occurred to us that probably the bleaching power was due to *ozone*. Faraday has stated (Lecture at Royal Inst., noticed in Lond. Med. Gaz., June 20th, 1851, and copied into Amer. Jour. of Pharm., vol. xxiv, p. 74.) that "Essential Oils are thickened by long exposure to light and air; they become *ozonized*, and their properties changed. This was illustrated by reference to oil of turpentine. Freshly rectified and pure oil of turpentine was proved by admixture with sulphate of indigo to have no bleaching power. A small quantity of oil which had been exposed to air and light, (in a bottle half full,) destroyed the color in a few minutes like chlorine." It is probable that the oils tried by Dr. P. were those in the shop bottle. Could not the air in the test tube, in the experiment with camphine vapor, have become *ozonized*, and this acting powerfully as stated on the sulph-indigotic solution? The facilitating influence of the sun's rays in the camphor experiments is an additional reason in favor of this supposition. We have not had time to compare experimentally the results of Dr. Plummer with the views of Faraday, but have thought best to throw out the suggestion.—EDITOR AM. JOURN. PHARM.]

filtrates were treated with another portion of the powdered seeds, agitated and again filtered: In these filtrates scarcely a vestige of any color remained.

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### TINCTURA CINCHONÆ FERRATA.

BY SAMUEL SIMES.

Huxham's Tincture, the officinal Compound Tincture of Peruvian Bark, cannot be combined with any of the ordinary chalybeates without an offensive decomposition, seriously affecting its apparent, if not its real characteristics. These reactions were examined at the solicitation of Dr. J. F. Meigs, and a tincture prepared, so modified that it is no longer incompatible with the salts of iron. Sixteen grains of Ammonio Citrate of Iron are dissolved in each fluid ounce of this modified tincture, together constituting what has been denominated, for distinction, "Ferrated Tincture of Bark."

It is readily prepared by digesting in the Edinburgh Compound Tincture of Cinchona, sufficient hydrated sesquioxide of iron to completely eliminate the cincho-tannin, whether pure, oxidized, or combined. One ounce of hydrated sesquioxide, dried at a temperature not exceeding 130° Fahr., usually suffices for one gallon of the tincture. After filtration, the tannate and excess of oxide should be washed with boiling alcohol to remove any trace of alkaloid which may have been in combination with the tannin and precipitated with it. This alcoholic solution may be evaporated to dryness, the product dissolved in a little water acidulated with citric acid, and added to the filtrate along with the proper quantity of iron salt. It differs little in appearance from the ordinary Huxham's tincture, is exceedingly agreeable, and in teaspoonful doses has become a very energetic invigorative, admirably adapted for administration in those cases of weak and languid habits of children and females, where the body is in a pallid or flaccid state, and very susceptible of fatigue or morbid action.

The ferrated tincture is not solely dependent on the quinia and iron it contains for its value as a curative agent. The grateful, and by no means inefficient adjuvants, the orange peel and snake root, and the other proximate principles of cinchona, independent of quinia, are by no means to be overlooked, and cannot be



replaced by salts of quinia and iron alone, however scientific their artificial combinations may appear.

Fine French brandy, employed as the menstruum, yields a still more grateful preparation, and should be substituted in all cases for the diluted alcohol, when the additional expense is no obstacle.

A quantitative examination of the cinchona alkaloids contained in this tincture, both before and after the elimination of the tannin, was made without appreciable difference in the results. A portion of the tincture as I have supplied it having been delivered to Prof. Booth to determine its iron constituent with accuracy, elicited the following statement:

PHILADELPHIA, Aug. 3d, 1853.

DEAR SIR:—The Ferrated Tincture of Bark, which you submitted to me for analysis, yields 4.23 grains of sesquioxide of iron to the fluid ounce.

Respectfully yours,

JAS. C. BOOTH.

MR. SAMUEL SIMES, Philadelphia.

The sesquioxide in 100 grains of the ammonio-citrate of iron was accurately determined to be 25.84 grains, consequently 4.23 grains of sesquioxide correspond with 16.37 grains of ammonio-citrate in each fluid ounce of the tincture examined. The slight discrepancy is probably due to some difference in graduated measures.

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#### PHARMACY IN GERMANY.

GÜTTINGEN, [GERMANY,] July 12th, 1853.

ESTEEMED FRIEND:—It is with much pleasure that I sit down to answer your queries in regard to the state of Pharmacy and Pharmaceutical Education in Germany; and as my object has been to obtain true and substantial information, I have called to my assistance Prof. Wiggers, Professor of Pharmacy and Materia Medica in this University, and Inspector (appointed by the Government) of the *Apotheke* of the Kingdom of Hanover, to whom I am thankful for many of the ideas contained in these answers.

1st. The *schema* of pharmaceutical education does not differ much in the different States of Germany; in Austria only is the system not so scientifically conducted.

2d. The actual amount of shop practice is seven years. After serving four to five years as an apprentice, and then making an examination before the Judicial Physician of the District, the candidate is admitted to the rank of Assistant, which rank he must have fulfilled three years before he can present himself as candidate to the last State Examination. During his term of apprenticeship, he is only allowed to prepare prescriptions, under the immediate superintendence of an assistant.

3d. The *Schools of Practical Pharmacy* are in a great degree different from the apothecary's shop, only those operations being performed that do not often occur in the common operations of the apothecary, or such that serve to increase the practical knowledge of the student. A large portion of the time is taken up in chemical analysis, (principally qualitative,) this branch of study being neglected in the shop practice, or rarely taught in the *Apotheke*. Such service in these laboratories does not pass in lieu of the shop practice. In some of the German countries the studying at the University, or at Pharmaceutical Institutions, is not *obligatory* before a candidate can present himself for examination, though the high standard required at the examination in most cases renders it necessary for the student of pharmacy to spend two to three terms at the University or such institution. In Prussia the law compels the candidate to spend a certain amount of time at the University or Institute.

4th. In regard to the *actual* extent and degree of the inspection of the stock of the druggist, I have the following to communicate, this being the manner of conducting it in Hanover: 1. The persons employed and all books belonging to the business are revised, and if any deficiencies are found they are entered in the *protocol*. 2. The shop, store room and laboratory are examined, as to whether satisfactorily and properly arranged, and supplied with the necessary apparatus and fixtures. 3. All medicines are physically and chemically proved, and are required to be of the best quality,—and in such quantities as the size of the business demands. By this manner of control only the best quality of medicines can be kept on hand; and the only manner in which the *Apotheke* can commit a fault is in not putting the proper quantity of medicine in a preparation. If in any part of the *revision*, deficiencies are found, they are entered on the *protocol*, which is

then sent to the proper officers of the Government. Where deficiencies are found, the Government orders the Judicial Physician of the District in which the *Apotheke* is situated, to demand in writing that the apothecary shall remedy such deficiencies within a proper time; if after this time the evil is not remedied, he is punished by a fine. The revision of the *Apotheke* is conducted in the presence of the Judicial Physician and the magistrate of the district. No previous intimation is given to the Apothecary of the time of the revision, and during this time the examiners are obliged to lodge and board themselves.

5th. All poisons, according to the German regulations, are required to be kept in a separate apartment, under lock and key. No poison is allowed to be dispensed, without the buyer presents a certificate from a magistrate, which gives the apothecary the special privilege to do so. This certificate is then to be entered in the Poison book, where it must be preserved under lock for at least twenty years.

6th. The *Apotheke* is responsible for an error made by a physician in his prescription when he dispenses it without first inquiring privately from the physician if it is his intention that the prescription should be so dispensed; if he still demands the quantity ordered, the *Apotheke* is obliged to prepare it, and is not responsible for any consequences that may follow.

7th. In the Kingdom of Hanover the sale of patent medicines is forbidden. The *Apotheke* does not engage in such traffic, though in some other parts of Germany I have heard of patent medicines being sold in the shops of merchants, &c.

8th. A candidate for examination must be prepared in *botanical* knowledge.

9th. It is required that he must have a theoretical and practical knowledge of Botany, which must be obtained by attending lectures and demonstrations, and by making botanical excursions.

10th. In the branch of Mineralogy a pharmaceutical student is only required to know those minerals from which the preparations used in pharmacy are obtained.

11th. With very few exceptions the physician and apothecary are on the best terms; but no pecuniary relations are allowed to exist between them. It is strictly forbidden by law for an *Apo-*



*theke* to make a present to the physician for the purpose of obtaining his patronage.

12th. Owing to the strict regulations in regard to those who dispense the medicines, errors seldom occur. In the Kingdom of Hanover only one case occurred in the last twenty-five years, in which an apprentice gave tinct. opii instead of tinct. jalapæ. In such cases the apothecary is answerable, and it is therefore necessary for him to pay particular attention to his apprentices and assistants. If an accident should occur through carelessness in this respect, and after the proper warning more attention is not paid to it, the *Apotheke* can then be compelled to dispose of his business, or put it under the direction of a sworn manager.

13th. The expenses of a student whilst in attendance at the University is different in various parts of Germany. In Berlin his yearly expenses would reach 400 American dollars; in Göttingen from \$250 to \$300, and in some parts of South Germany it is still cheaper. The examination fees are fifteen dollars. Quite a number of gratuitous scholarships are found amongst pharmaceutical students; these are granted by the proper authorities, when a young man can show that he has not the sufficient means to finish his pharmaceutical education.

In finishing these remarks, allow me to call your attention to a very complete and able article on the State of Pharmacy in Germany and Prussia, by M. Bussy,\* republished in late numbers of the London Pharmaceutical Journal and Transactions. They include a large extent of information, and are in all respects to be relied upon. In some of my answers I may have been somewhat too concise, owing to a press of time; but I hope the time is not far off when I can give you more full and verbal answers to your inquiries. As I have devoted a large portion of my time to Botany, my collections have been more botanical than pharmaceutical, though it has been my object to increase my collections in all branches belonging to a pharmaceutical student.

Trusting that you may long be spared to fulfil your useful position,  
I remain yours, truly,

SAMUEL S. GARRIGUES.

TO PROF. WILLIAM PROCTER, JR.

\* See pages 323 and 425 of this volume.—ED.

## THE ALKALOIDS AND PROXIMATE PRINCIPLES.

By JAMES C. AYER.

Perhaps no subject within the range of their art is better worth the attention of pharmacutists at the present time, than the elimination of the curative proximate principles of medicine into purity, *and their application to practical purposes*. None fail to appreciate the value of those which have been reduced to common use, while all seem to overlook the possible importance of those that have not. Morphine is not more superior to opium, or quinine to bark, than are the active principles of many medicines over the crude parent drug which is now employed. The several deleterious substances present with morphia in opium, prove the superiority of that alkaloid, as a remedial agent, to opium, or any preparation of it that could be made. The like relative value is known to exist in so many other cases, that it may be safely inferred for a large proportion of all the drugs whose virtues consist in a within contained alkaloid or proximate principle.

Since almost all the vegetable remedies do owe their activity to this cause, it may be seen how large a proportion of all the medicines in use are as unskilfully given as would be the grinding of corn, cob, husk, stalk and root into meal, while the kernel only can nourish.

Many valuable curative agents are so encumbered by the accompanying deleterious or offensive substances with which they exist, as to be nearly or quite useless. This was true of the cod-liver oil, until scientific skill had succeeded in affording it to the market in a state admissible to the stomach; and is still true to some extent of the castor oil.

True, almost every article of medicine, where an active principle could be looked for, has been submitted to the searching investigations of the chemist, whose labors have given us more or less insight into the composition of them all. Proximate principles have been separated, and processes given for their preparation sufficiently available for experimental purposes. Hence, it is not the discovery which is needed now, but the application of discoveries already made.

The remedies patent to improvement are too numerous and too obvious to need enunciation here, so that I will no more than sug-

gest to your readers whether there does not lie in this direction an open field of enviable usefulness.

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## PHARMACEUTICAL NOTICES.

BY WILLIAM PROCTER, JR.

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### SUCCUS TARAXACI PARATUS.

The preparations of *Taraxacum*, or *dandelion* root, have within a few years past attracted considerable attention from the medical profession, and have been an object of experiment from skilful pharmacutists both in England and the United States. The hurtful effect exercised by heat in evaporating solutions of the soluble matter of dandelion, has long been noted, and many recollect the molasses-like extract which formerly was too commonly seen, unmarked by any distinct, sensible property of the recent root. The application of spontaneous and vacuum evaporation in making the solid extract, demonstrated this beyond cavil, and in the last U. S. Pharmacopœia directions were given for this precaution, as well as in regard to the period of collecting the root. The *Liquor Taraxaci* (fluid extract) described by Mr. Redwood in Gray's Supplement, is prepared by macerating four pounds of the recently dried root in sufficient cold water for 24 hours, expressing, and evaporating to 36 fluid ounces, to which liquid 12 fluid ounces of alcohol is added; hence each fluid ounce of the preparation represents a troy ounce of the *dried* root. The dried root of the dandelion is more easily extracted than when it is recent, owing to the glutinous character of the juices and the difficulty of effectually disintegrating the tissue of the root, so as to completely reach the contained matter by menstrua; yet it is more than probable that the evaporation of the aqueous solution to the proper degree of concentration, not to speak of the effect of the process of drying the root in the first place, injures the product. This is partially avoided by a process which I published in the 20th volume, page 86, of this Journal, the *recent* root being employed, and the resulting preparation representing about twice its weight of the fresh root. In the preparation about to be described, the virtues of the root, be they what they may, are preserved unimpaired, as no heat



is employed in the process; the natural juice of the plant being merely admixed with sufficient alcohol to preserve it from change. Take of fresh Dandelion Roots (collected in September or October) twenty pounds, (*av.*)

Alcohol, 835 sp. gr. four pints.

Slice the roots transversely in short sections, and by means of a mill or mortar and pestle reduce them to a pulpy mass; then add the alcohol and mix them thoroughly. The mixture thus far prepared at the season when the root is proper for collection, may be set aside in suitable vessels; stoneware jars are appropriate; and extracted as the preparation is needed through the other seasons. After having stood a week, or until a convenient time, the pulpy mass is subjected to powerful pressure, until as much as possible of the fluid is removed. This is then filtered and bottled for use. It is necessary that sufficient time should elapse after the pulp is set aside for the alcohol to penetrate the fibrous particles and commingle with the natural juices, as well as for the woody structure of the root to lose its elasticity, that it may yield the juice more completely on pressure. When the pulp has stood six months in this manner it yields the juice with great readiness, and possessed of the sensible properties of the dandelion in a marked degree. When eight pounds, avoirdupois, of the root is thus treated, after standing several months, the practical result is about six pints of fluid, with an ordinary screw-press. This yield will vary in amount with the condition of the root when collected, and the length of time it is exposed afterwards, as well as the power of the press used. Should the alcohol in this preparation be contraindicated, it might be partially removed by exposure in a water bath until the juice was reduced to five-sixths of its bulk, and then for every pint of the residue, eight ounces Troy of sugar may be added and dissolved in it.

#### NOTE ON CUCUMBER OINTMENT.

Several years ago (April, 1847) I published in this Journal a note on the preparation of Cucumber Ointment, since when it has gradually come more into use as an emollient application to irritated parts of the skin. It may not be improper to again call attention to the preparation and the mode of preparing it.

Take of Green Cucumbers, (suitable for table use,) 7 pounds, *av.*

Lard, (the purest and whitest,) 24 ounces “

Veal suet, (selected,) 15 ounces “

The unpared cucumbers, after being washed, are reduced to a pulp by grating, and the juice expressed and strained. The suet is cut in small pieces, and heated over a salt water bath until the fat is fused out from the membranes; the lard is then added, and when liquefied is strained through muslin into a wide-mouthed earthen vessel capable of holding a gallon, and stirred until it commences to thicken, when one third of the cucumber juice is added, and beaten with the ointment by means of a wooden spatula until its odor has been almost wholly extracted. The part that separates by standing is decanted, and the other two thirds consecutively incorporated and decanted in the same manner. The jar is then closely covered and placed in a water bath until the fatty matter entirely separates from the exhausted juice. The green albuminous coagulum which floats on the surface is then skimmed off, and the jar put aside in a cool place that the ointment may solidify. The crude ointment is then separated from the watery liquid on which it floats, melted, and strained; a part into a jar and closely sealed for keeping, the remainder into a mortar, and triturated with a little rose-water until it is very white and creamy, for present use. It is usual to keep this ointment in glass jars covered with rosewater, to prevent access of the air.

#### FLUID EXTRACT OF HYOSCYAMUS.

The following formula was communicated by Mr. Charles Augustus Smith, of Cincinnati, who states that the preparation it affords has been much used and liked in that city. When made from carefully dried and good hyoscyamus, it must be a fair representative of the plant.

Take of Hyoscyamus leaves, (garbled,) eight ounces (Troy.)

Diluted alcohol, - - - a sufficient quantity.

Sugar, - - - eight ounces (Troy.)

Reduce the hyoscyamus to a uniform coarse powder; pour over it a pint of diluted alcohol; allow it to macerate twenty-four hours; put it into a suitable percolator, and, when carefully packed, pour gradually on it diluted alcohol, until three pints of tincture has passed. The flow should be very slow, that thorough exhaustion of the leaves shall take place. The tincture is then evaporated to ten fluid ounces—the sugar dissolved in it while hot, and when cold two fluid ounces of alcohol (.835 sp. gr., or as much as is

sufficient to make the whole measure a pint) is added, and the fluid extract passed through a fine muslin strainer.

This preparation affords an admirable means of prescribing henbane in fluid preparations. The alcohol of the tincture is avoided, and the trouble of incorporating the solid extract superseded. It is of the same proportional strength as the fluid extract of valerian, and the dose varies from 15 drops to half a teaspoonful, the latter dose being equivalent to two or three grains of extract.

When the apothecary has in possession solid extract of hyoscyamus of *ascertained* good quality, a fluid extract of similar strength may be obtained by triturating half an ounce of the extract with ten fluid ounces of water till dissolved;—eight ounces of sugar dissolved in it, and finally sufficient alcohol to make it measure a pint, and strain. Practically, henbane yields but 5 per cent. of extract; the above recipe assumes it to be  $6\frac{1}{4}$  per cent.—a difference altogether proper in view of the possible injury to the juices in preparing the extract originally.

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#### ON SYRUP OF PHOSPHATE OF LIME.

By A. B. DURAND.

Having been requested by a medical friend to prepare a syrup of phosphate of lime, I undertook a series of experiments in order to ascertain the best means of making such a preparation; and have adopted the following formula as the most eligible for accuracy and facility, as also for the superiority of the product. Thinking that some of the readers of the Journal may find it useful, the formula is at their disposal:

Take of Precipitated phosphate of lime,	128 grains.
Glacial phosphoric acid,	240 grains.
Sugar, in coarse powder,	$7\frac{1}{2}$ oz., (Troy.)
Distilled water,	4 fluid ounces.
Essence of lemon,	12 drops.

Mix the phosphate of lime with the water, in a porcelain capsule, over a spirit or gas lamp, or in a sand bath, add gradually the phosphoric acid until the whole of the phosphate of lime is dissolved. To this solution add sufficient water to compensate for the evaporation; then dissolve the sugar, by a very gentle heat, and, when perfectly cold, add the essence of lemon.



The syrup of phosphate of lime thus prepared is colorless, transparent, of an acid taste, and contains two grains of the phosphate of lime and nearly four grains of phosphoric acid to each teaspoonful, and has been found to be more acceptable to the stomach than the solution of phosphate of lime usually prescribed. When diluted by the patient previously to its being taken, it forms a phosphoric lemonade not unpleasant to the taste.

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## ON ERGOT OF RYE.

BY H. L. WINCKLER.

The author, at the beginning of the harvest of last year, collected ergot of rye, which he has dried at 139° Fahr., pulverized, and extracted first with ether and then with water.

The watery extract was treated with strong alcohol, and separated from albuminous matter by filtration. The spirit was distilled off, and the residue brought to dryness. During this operation a small quantity of a brown powder, (the ergotine of Wiggers,) was precipitated, which again dissolved in the concentrated liquid.

The ethereal extract contained the fatty oil, which was equal to 34 per cent. of the ergot of rye. The residue of the watery extract treated with alcohol (Winckler's extractive ergotine) dissolves readily in alcohol and water under the precipitation of a light brown powder (the ergotine of Wiggers.) It has a bitterish, cooling taste, and afforded, when distilled with quick lime, a distillate with the odor of herrings, containing propylamine or trimethylamine, but no ammonia. The residue consisted of a compound of secaline (that is, the beforementioned volatile base) with ergotine (Wiggers.) The latter body Winckler regards as an acid.

By treatment of ergot of rye with alcohol acidified with sulphuric acid, the author extracted a red ferruginous coloring matter, which has a great resemblance to blüthämatin.

The chemical constituents of ergot of rye are, according to the author, secaline in combination with ergotine, the red ferruginous coloring matter with a base yet to be eliminated, albumen soluble in water and in a coagulated condition, a large quantity of fatty oil, which in the normal grain appears to be replaced by amylon, fungus sugar (Wiggers,) which disposes the watery extract of ergot of rye so strongly to fermentation, formiates and phosphates.

These are the most important constituents. The specific action of the ergot of rye can only be ascribed to the secaline compound or the coloring matter, or to both of these compounds together, as, according to all experience, it does not belong to the fatty oil.

The powdered ergot of rye intended for medical purposes should be dried at a temperature not exceeding 139° Fahr., and preserved completely dry in a vessel impermeable to the atmosphere. The powder preserved in this manner appears almost odorless, of a light grey blue color, but evolves the peculiar odor of ergot of rye directly it is moistened with water. The watery extract, particularly that prepared with finely-powdered ergot, in the cold, or treated with cold water, and then evaporated in a water bath, possesses the peculiar odor of ergot of rye, affords by distillation with caustic lime a considerable quantity of secaline and ammonia, and contains without doubt the greatest portion of the active constituents of the ergot of rye; but it cannot be kept. The spirituous tincture, prepared with alcohol of 40 per cent., by several days' digestion at an ordinary temperature from finely pulverized ergot, appears of a dark brown color, contains all the active constituents of the ergot of rye, and very little fatty oil, which separates in a crystalline form at very low temperatures.

The spirituous extract is best kept and most effective when it is prepared by twice extracting the fine powder with an equal quantity of cold distilled water, clarifying the concentrated extract, and treating it with alcohol of 80 per cent. as long as a precipitate results on the addition of a fresh portion. The spirituous fluid is after 24 hours separated from the precipitate by filtration; the filtrate subjected to distillation in a water bath, and the residue evaporated to the consistence of an extract. The extractive ergotine prepared in this way is a little hygroscopic, possesses a light brown color, a slight narcotic odor, dissolves under the separation of a little ergotine (Wiggers) in water, and evolves, when treated with a solution of caustic potash, in a high degree, the penetrating odor of secaline. By distillation of the concentrated watery extract with caustic lime a very concentrated solution of secaline is also obtained.

Winckler recommends for further investigations on the activity of the ergot of rye the pure muriate of secaline, the neutral compound of secaline with ergotine, the red coloring matter, and the

neutral compound of ergotine with ammonia. Winckler has found the compound of ergotine with secaline (ergotinate of secaline) in the black sporous mass of *Lycoperdon cervinum*.—*Annals of Pharm.* July, 1853, from *Central Blatt*.

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#### A NEW MODE OF DETECTING STRYCHNIA AND ITS SALTS.

Dr. Edmund William Davy, a lecturer on chemistry in one of the Dublin medical schools, whose scientific researches in chemistry, in connexion with medicine and pharmacy, have been frequently noticed in the “*Annals of Pharmacy and Practical Chemistry*,” has communicated a valuable paper on a new method of detecting strychnia and its salts, to the “*Dublin Quarterly Journal of Medical Science*.” In the course of some recent experiments on strychnia, he discovered the following method of detecting this alkaloid and its salts. To a little of the strychnia, in powder or in small crystals, add a drop of undiluted sulphuric acid, so as to moisten it, then a little of the ferrocyanide of potassium (red prussiate of potash) in powder, or a drop of a strong aqueous solution, and mix them well together, when a fine deep violet color will be immediately produced. This test is one of such extreme delicacy, that a quantity less than the one thousandth part of a grain will afford an intense violet, which can be extended over a considerable surface. As an additional proof, he dissolved the fiftieth part of a grain of strychnia in one thousand grains of distilled water; one drop of this solution, weighing one grain, on being evaporated on a surface of glass, and treated as referred to, afforded a faint, but characteristic violet shade, though containing only the one fifty-thousandth part of a grain of the alkaloid. This test, proposed by Dr. Davy, he affirms to be quite equal in point of delicacy to M. Lefort’s, whilst, at the same time, it possesses certain advantages over that; the violet color produced by Dr. Davy’s test is more permanent than in that produced by M. Lefort’s, and in this last, the violet color quickly changes to a brown or olive shade, whereas, in Dr. Davy’s, it passes more slowly into a light brick-red color, which remains for several hours, and is in itself highly characteristic. Dr. Davy states that his test appears to be less affected by the presence of organic matter than is that of M. Lefort; thus, in M. Lefort’s, the pres-



ence of a little alcohol, ether, or sugar, with a solution with the strychnia, destroys the test immediately, and instead of the violet color, a green color is produced; whereas, in similar circumstances, by the use of his test, the characteristic violet color is produced, being little affected by the presence of these substances. From a series of comparative trials with both these tests, Dr. Davy finds that the vegetable matter in ale and porter has a less injurious effect with his test than with that of M. Lefort. In cases where strychnia is present along with organic matter, Dr. Davy recommends that the latter should first be separated as much as possible from the strychnia, by means of some of the methods in use for that purpose, as the presence of organic matters interferes more or less with the application of either one or the other test, and in both tests it is necessary that the sulphuric acid employed should be undiluted, for he finds that if the acid be much weaker in strength than that of a specific gravity 1.488, the desired effect will not be produced. M. Lefort's test for the detection of strychnia is prepared by moistening this alkaloid with undiluted sulphuric acid, and then adding to it a little bichromate of potass, when a fine violet color is produced. This method has, as is well known, been commonly considered as the most delicate and characteristic test for the detection of strychnia, even when in combination with organic matters of various descriptions.—*Annals of Pharmacy*.

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#### ON THE PREPARATION OF NITRO-PRUSSIDE OF SODIUM.

By A. OVERBECK.

The salt discovered by Playfair, which is produced with evolution of oxide of nitrogen, cyanogen, nitrogen and carbónic acid, by the action of nitric acid upon prussiate of potash, is only separated with difficulty from some substances which are also dissolved in the fluid. From this fluid, which is brown, nitrate of potash and oxamide separate; and after neutralization with carbonate of soda and subsequent heating, a green or brown precipitate is deposited.

The separation of Playfair's salt from the nitrate of potash by Playfair's process, has given the author no satisfactory result, because the selection of the two kinds of crystals is very wasteful of time. Kyd also appears to have succeeded no better, since he has adopted another course. The author could not find the point at

which the nitro-prusside of sodium first crystallized, by trying the fluid on the sand-bath with the thermometer at all temperatures from  $176^{\circ}$  F. downwards. By spontaneous evaporation also he always obtained a mixed crystallization, both salts forming in intimate contact. The method given by Kyd for the preparation of the nitro-prusside of copper has also its particular difficulty. Without taking into consideration that the smallest excess of caustic soda in the decomposition of the nitro-prusside of copper contaminates the product with an alkaline ferrocyanide, a pure green precipitate is not always obtained on precipitation with sulphate of copper; it is frequently reddish from ferrocyanide of copper, the formation of which is not to be avoided when there is an excess of carbonate of soda, and which is intimately connected with the brown color of the precipitate formed by boiling the neutralized fluid.

According to the experiments made by the author with reference to Playfair's further statements, the following method is adapted to furnish the salt pure:—

$5\frac{1}{2}$  parts of commercial nitric acid, diluted with an equal weight of water, are poured over 4 parts of pounded prussiate of potash in a retort; after solution has taken place, which is generally completed in about ten minutes when the acid is of the usual degree of concentration, with strong evolution of the gases described by Playfair and the production of a coffee-brown color, the retort is placed upon the water-bath until a drop of the fluid gives a dingy green instead of a blue precipitate with a solution of sulphate of iron. The solution is allowed to cool, by which means a large quantity of nitrate of potash is separated, from which the green mother-liquor is poured away; from this all nitrate of potash is separated by repeated concentration. The fluid is then neutralized with carbonate of soda while being heated on the water-bath, taking care only to add the carbonate as long as a pure blue precipitate is produced. This is collected on a filter and washed. From the united filtrates the substance is obtained in the most perfect purity by spontaneous evaporation. The ruby-red prismatic crystals are washed with water, and dried between blotting-paper.

The crystals, as well as the solution, are best preserved in black bottles. At any rate, the solution must be carefully kept from the sunlight.—*Chem. Gaz.*, July 15, from *Archiv der Pharm.*

## EXAMINATION OF FUSEL OIL FROM INDIAN CORN AND RYE.

BY CHARLES M. WETHERILL, Ph. D., M. D.

The researches of Guckelberger, Bopp, Keller, and others, who obtained, by the fermentation and oxidation of nitrogenized substances, such as gluten, casein, &c., the successive members of the series of acids,  $C_nH_{2n}O_4$ , rendered it probable that such a succession might be detected in fusel oil, by employing Liebig's method of isolating these acids, a method which enables small quantities of one of the group to be separated from larger quantities of the other members. It was also interesting to make an examination of fusel oil obtained from the fermentation of Indian corn.

With respect to the history of fusel oil: as is well known, Dumas obtained it first from the fermentation of potatoes; Balard showed that with this, the oil obtained from the fermentation of grapes was in its principal constituent (amylic alcohol) identical; and Medlock and Rowney showed the same to be the case with the fusel oil of the English and Scotch grain distilleries.

With regard to the acids present in fusel oil, Mulder detected ænanthic, Kolbe, margaric, and Rowney, capric acid. Medlock, who examined a grain fusel oil for an alcohol of one of the fatty acids, obtained nothing but alcohol, water and amylic alcohol. Kent (*Am. Journ. Pharm.*, 1851, p. 354,) examined a specimen of fusel oil which contained acetic acid and valerianic acids, besides an ether, the acid of which was not isolated.

Wurtz (*Comptes Rendus*, xxxv. 310,) has recently isolated from potatoe fusel oil butylic alcohol boiling at  $112^{\circ}$  Cent.

In the subject of the present memoir, besides water and alcohol, formic (?),\* acetic, caproic (?), ænanthic (?), and caprylic acids were detected, together with a small quantity of oil of turpentine, which probably proceeded from the barrel in which the substance was put, in the distillery, the proprietors of which were manufacturers of burning fluid.

The oil was obtained from the rectification of spirits made partly from rye, and partly from maize. It was neutral to test paper, of limpid, colorless appearance, like alcohol, and of strong

\* The acids marked thus (?) were not obtained in sufficient quantity to obtain more than probably true analytical results.



fusel smell. The volume was not much diminished by agitation with water; but the water when distilled gave alcohol. When distilled with a platinum wire, the thermometer rose gradually from  $92^{\circ}$  Centigrade to  $226^{\circ}$ , at which temperature there remained a small portion of dark colored oil. At first water and oil came over, and then oil alone. A considerable portion had passed over before the thermometer indicated the boiling point of amylic alcohol; but by successive rectifications, removing the water, the great bulk of the liquid had the boiling point of  $132^{\circ}$ .

The following are the proportions of distillate for such a first distillation:

Boiling Point.	Fluid Ounces.
$92^{\circ}$ — $99^{\circ}$ (2 layers)	$4\frac{1}{2}$
$99$ — $109$ (2 layers)	$4\frac{1}{2}$
$109$ — $121$	$3\frac{1}{4}$
$121$ — $130$	$4\frac{1}{2}$
$130$ — $134$	16
$134$ — $136$	$4\frac{1}{2}$
$136$ — $137$	$4\frac{1}{2}$
$137$ — $147$	$1\frac{3}{4}$
$147$ — $168$	2
$168$ — $200$ (yellowish)	$\frac{1}{2}$
$200$ — $226$ (yellowish)	$\frac{1}{2}$

There remained in the retort about  $\frac{3}{4}$  oz. of a reddish brown liquid. When an alcoholic solution of caustic potassa was added to the members of this series, a bright yellow color was developed, which was deeper the higher the boiling point. After standing for some time, the liquids were shaken with water which was separated. They were then distilled, and the residue, which was dark and strongly alkaline, was washed several times with water; other portions of the fusel oil were distilled from aqueous and alcoholic solutions of potassa, and the alkaline liquids containing the fatty acids were united.

*Examination of the Potassa Solution for Fatty Acids.*—The potassa solutions obtained by uniting the alcoholic and aqueous solutions of potassa, were evaporated to dryness after several additions of water to expel the alcohol. They were then dissolved in water and decomposed in a retort, by dilute sulphuric acid, and distilled (with the addition of water) until it was supposed the fatty acids had passed over. The thumping of the retort, as the

sulphate of potassa separated on concentration, was avoided partly by removing the crystals, and partly by using a ring gas burner made from a tube, and by which means the upper portion of the retort could be heated, while the bottom was kept in sand. A small portion of dark matter was left with the residue and crystals in the retort. This was tested for fatty acids (after neutralizing the free acid and separating the sulphate of potassa by alcohol, by nitrate of silver; a very small quantity of whitish brown precipitate was obtained, which did not crystallize from boiling water.

The distillate containing the volatile fatty acids, consisted of an acid aqueous fluid, upon which floated drops of dark colored acid oil, of a peculiar rancid smell. A small portion of the aqueous fluid was neutralized by carbonate of soda, was added to the rest and distilled; nitrate of silver added to the solution of the residue in the retort caused a white precipitate, which immediately blackened on heating the test tube, indicating the presence of *formic acid*. The whole of the distillate was neutralized by carbonate of soda, and evaporated in vacuo; it crystallized in needles like acetate of soda. As the quantity was too small for an analysis, it was heated with sulphuric acid and alcohol in a test tube; the smell of acetic ether was distinct.

The fatty acids arising from decomposing the different potassa solutions were together in such small quantities, (although a gallon and a half of fusel oil was employed,) that they were united. About  $\frac{1}{8}$ th was neutralized by  $\text{NaOCO}_2$ , added to the whole, and distilled. Another portion of the distillate resulting from this experiment, was treated in the same manner, and finally the whole. The soda salts thus resulting, I call 1, 2, and 3; they were not in large quantity. A drop of the solution of each, evaporated upon a glass plate, was examined with the microscope.

No. 1 appeared in fibrous crystals converging towards the centre of the drop.

No. 2 appeared to consist of two different kinds of crystals, especially as seen by polarized light; one kind in one position of the plane of blue plumose crystals; and the other of white stellated prisms.

No. 3, evaporated at ordinary temperature, appeared in feathery stellated crystals.

In neutralizing the remainder of the liquid to prepare the salt, No. 3, as the fluid was approaching saturation, a peculiar motion was observed in the oil globules floating on the surface of the liquid; they were spasmodically agitated and repelled each other, moving quickly from side to side, very much as some animalculæ appear in the field of the microscope. It was not a rotation or movement like that of camphor, or the butyrate of baryta on water, though doubtless proceeding from the same cause.

*Fatty Acids in Nos. 1, 2, and 3.*—The soda salt, No. 1, the residue in the retort after the first neutralization by carbonate of soda, was dissolved in water and nitrate of silver added; the precipitate was very slight; the solution concentrated in the water bath darkened very much. The residue, after evaporation, yielded to boiling water, a small quantity of precipitate, insufficient for analysis, which separated on cooling. After evaporation once more in vacuo, over sulphuric acid, the residue evolved a strong smell of acetic acid when treated with sulphuric, and gave with sulphuric acid and alcohol, acetic ether.

The soda salt, No. 2, dried up over sulphuric acid in vacuo, to a gummy mass. On the addition of nitrate of silver to the solution, an abundant white precipitate fell, which was separated and redissolved in boiling water, from which the greater part was deposited on cooling. The remainder yielded but little to boiling water. I obtained enough of this precipitate to make two atomic weight determinations. It burned quietly and left a spongy mass of metallic silver, which left no residue on treatment with nitric acid. 0.11775 grammes of the salt gave 0.051 silver; and 0.128 gave 0.0555 silver, corresponding to a per centage of silver 43.26 and 43.35. Caprylate of silver requires by calculation 43.028. I had not sufficient of this salt for an organic analysis.

Soda salt, No. 3, which was slightly alkaline, was neutralized by nitric acid. The precipitate by nitrate of silver darkened slightly on boiling with water, with deposition of a small quantity of dark metallic silver on the capsule. A white curdy precipitate separated from the filtrate before cool, and on cooling, a further quantity of a slightly grayish precipitate. This latter precipitate, which dried at 100° C., weighed 0.0335, gave on ignition, 0.016 Ag., or a per centage of 47.74. The silver salt of cœnanthic acid contains 47.161 per cent. of silver.



The white precipitate which deposited before cooling, was dried at  $100^{\circ}$ , and was very electric; it gave the following analytical results: 0.12 grammes yielded 0.052 metallic silver, or 43.33 per cent., which agrees with caprylate of silver. I performed the organic analysis by combustion with oxide of copper. The results do not accord so well for caprylate of silver, the quantity at my disposal being almost too small for an accurate analysis of this salt; 0.1875 grammes gave  $\text{CO}_2 = 0.25575$ , and  $\text{HO} = 0.1115$ , or a per centage as follows:

By Calculation.				
$\text{C}_{16}$	.	96	38.20	37.20
$\text{H}_{15}$	.	15	6.00	6.60
$\text{O}_4$	.	32	12.77	12.87
Ag.	.	108	43.03	43.33
		<hr/>	<hr/>	<hr/>
		251	100.00	100.00

The filtrate from the first of these precipitations gave on evaporation in the water bath a residue, which yielded to a little boiling water a grayish salt, which precipitated on cooling. 0.027 of this gave 0.013 or 48.14 per cent. of silver. This would correspond to caproate of silver, which contains 48.43 Ag. The residue of oil of a portion of the fusel oil from which the above mentioned acids were separated, was treated with an additional portion of potassa, and the fatty salts separated from these aqueous solutions by chloride of sodium, and decomposed in a retort by sulphuric acid. The acids were boiled with baryta water, and filtered hot; a dark resinous substance was left on the filter. On cooling, a white flaky precipitate fell; carbonic acid passed through the filtrate from this precipitate, yielded a carbonate of baryta, from which scarcely anything could be obtained either by boiling water,\* or by exhausting, when dry, with absolute alcohol.

The baryta salts of the fatty acids were in such small quantity that a separation and purification by crystallization was out of the question. They appear to consist of caprate and caprylate of baryta. This solution was evaporated in the water bath, removing the salt as soon as enough had separated to perform an atomic

\* The boiling water gave, on cooling, 0.445 white precipitate, which contained 34.06 p. c. BaO.

weight determination. The following is the result, premising that—

Enanthylic acid requires BaO per cent.,	= 38.44
Caprylic       “       “       “	36.20
Capric         “       “       “	31.94

The first salt that separated was in white imperfectly crystalline scales; 0.131 gave 0.0555  $\text{BaOCO}_2$ , corresponding to 32.9 per cent. of baryta. In these crystallizations the salt separated, as a film on the surface of the liquid. The next salt, 0.53 gave  $\text{BaOCO}_2 = 0.252$  or BaO p. c. = 36.92. The last crystallization gave 0.194 grammes of a salt which yielded 0.091 carbonate baryta, or 36.43 per cent. of baryta.

*Examination of the Alcohols of Fusel Oil.*—The portion of fusel oil from which the fatty acids had been separated, was washed with water, and submitted to a fractional distillation. At first oil came over together with an under layer of water, which was removed, and the different products of distillation dehydrated with carbonate of potassa, and with fused chloride of calcium. A considerable portion of chloride of calcium was taken in solution by that portion passing over between  $87^\circ$  and  $100^\circ$ , and which crystallized out on cooling, and after standing, in prisms or lengthened tables, similar to the compound of chloride of calcium and water. As these crystals had a peculiar smell from which they could not be freed by pressure between blotting paper, or by exposure to the air, and as they seemed less deliquescent than the ordinary crystallized salt with water, they were fused to determine the amount of volatile matter, in order to ascertain whether perhaps they were not a compound of amylic alcohol and chloride of calcium. The loss was 49.78 per cent., which corresponds to the chloride crystallized with six equivalents of water, or 49.28 per cent.

After having dehydrated the portions collected between  $81^\circ$ — $110^\circ$ ;  $110^\circ$ — $132^\circ$ ; and  $132^\circ$ — $136^\circ$ , which last contained the great bulk of the oil, they were submitted to four rectifications, in which the following stadia were observed :

$81^\circ$ — $84^\circ$ — $90^\circ$ — $100^\circ$ — $110^\circ$ — $120^\circ$ — $129^\circ$ — $132^\circ$ — $136^\circ$  Cent.

The residue above  $136^\circ$  was not sufficient to cover the thermo-

meter. In the second rectification,  $81^{\circ}$ — $84^{\circ}$  was collected at  $81^{\circ}$ — $82^{\circ}$ — $84^{\circ}$ .

During the fourth rectification, the thermometer still continued to rise from  $81^{\circ}$ — $136^{\circ}$ ; but nearly the whole of the oil was collected at  $132^{\circ}$ — $136^{\circ}$ , and the thermometer was longer stationary between  $81^{\circ}$ — $84^{\circ}$  than at any intermediate stadium. They all, where not masked by the odor of the fusel oil, (as in the case of the higher ones,) smelled strongly of turpentine. The distillate between  $81^{\circ}$ — $84^{\circ}$  was rectified, and what passed over at  $81^{\circ}$  collected. Its density at  $19^{\circ}$  was 0.8194; and it presented the characteristic of alcohol contaminated with some foreign substance. After having stood for a day over freshly ignited charcoal, water was added, in which it nearly all dissolved, giving a milky fluid, from which a little oil separated. Water was now shaken with the several distillates up to  $81^{\circ}$ — $119^{\circ}$  inclusive. The quantity of distillate was very much reduced by the water, and the resulting oil smelled strongly of turpentine. These oils, separated from the aqueous solution, stood over night upon charcoal, and were kept boiling for some time over fused chloride of calcium, so that the vapors flowed back into the flask; they were then distilled, in a wax bath, from the salt. The quantity of oil thus obtained was quite small. The chloride of calcium, when dissolved in water, set free a small quantity of oil of turpentine which was mechanically mixed with it.

Since the portion of oils passing at  $120^{\circ}$ — $129^{\circ}$  was the greatest in quantity after those already mentioned, I was desirous of forming the double sulphate, in order to ascertain by that means the presence of another alcohol besides amylic. I had three-fourths of a fluid ounce at my disposal, to which was added gradually an equal weight of oil of vitriol. After having stood for a few hours, there were two layers on the addition of water; the upper one a yellowish green oil, which diminished on the addition of more water. What remained undissolved, was in too small quantity for further examination; when rectified over carbonate of potassa, it began to boil at  $115^{\circ}$ , the boiling point at once rising. When suffered to evaporate upon the hand, it gave the smell of amylic alcohol and turpentine. The double sulphuric acid thus formed was neutralized by pure carbonate of baryta, and the baryta double salt, after evaporation to dryness in a water bath, was redissolved, fil-



tered and evaporated to crystallization. On cooling, crystals were obtained, which, under the microscope, and especially by polarized light, appeared as thin rhombic plates very much broken. I could not detect two different kinds of crystals. When dried for fifty hours in vacuo over sulphuric acid, these crystals presented the appearance of pearly scales, fatty to the touch. The mother waters gave a similar salt, and the mother water from these gave a small quantity of cauliflower-like crystals of the same appearance under the microscope; after having been dried in vacuo, their crystals blackened, and were decomposed when heated to  $100^{\circ}\text{C}$ .

The following is the amount of sulphate of baryta they contain, determined by incineration. They were difficult to burn, and after ignition they were moistened with a drop of sulphuric acid, and ignited a second time :

$$\begin{array}{l} 0.6105 \text{ gave } \text{BaOSO}_3 = 0.30325 = 49.67 \text{ per cent.} \\ 0.58525 \text{ " } \text{BaOSO}_3 = 0.2895 = 49.47 \text{ " } \end{array}$$

Anhydrous sulpho-amylate of baryta contains 49.49 per cent. of sulphate of baryta.

Towards the close of this investigation, I met with Wurtz's paper on the occurrence of butylic alcohol in a fusel oil examined by him. I was therefore desirous of looking for this body in the fusel oil under examination. The oils left by adding water to the product,  $81^{\circ}$ — $119^{\circ}$ , after having been treated as described, were in small quantity, and contained fusel oil and oil of turpentine, besides a little water. They began to boil at  $105^{\circ}$ , and were separated in two portions; those passing between  $106^{\circ}$ — $110^{\circ}$ , and those above  $110^{\circ}$ . These two portions were treated with sulphuric acid, and the baryta salts formed. Of these, only the liquid passing at  $106^{\circ}$ — $110^{\circ}$ , yielded enough for analysis, which was rendered uncertain by having unfortunately used for neutralization native carbonate of baryta which contained lime, and which was only discovered on examining the salts under the microscope, when the crystals of sulphate of lime were detected. The solutions were then evaporated to dryness, and exhausted with alcohol. The salts proceeding from the distillate above  $110^{\circ}$  yielded a small quantity of confusedly crystallized granules, not sufficient in quantity for analysis. The remaining portion gave a salt appearing in lance-

shaped crystals under the microscope. The following is the analysis of the salt:

1st Crystallization 0.184 gave  $0.07875 \text{ BaOSO}_3 = 43.21$  per cent.

2d " The mother waters yielded on concentration,  $0.14675$  of a salt which contained  $0.06875 \text{ BaOSO}_3 = 47.02$  per cent.

Both of these sulphates of baryta contained a small portion of sulphate of lime. The following is the quantity of fixed sulphate in three of the vinic acids:

Sulpho-vinate,	{ Lime }	{ Sulphate }	{ 46.89
	{ Baryta }		{ 60.23
Sulpho-amylate,	{ Lime }	{ Sulphate }	{ 36.36
	{ Baryta }		{ 49.49
Sulpho-butylate,	{ Lime }	{ Sulphate }	{ 39.31
	{ Baryta }		{ 52.62

It appears most probable that the salts analyzed were sulpho-amylate of baryta with a little lime, and possibly mingled with sulpho-vinates. I have not therefore been able to detect Wurtz's alcohol in the specimen of fusel oil from maize and rye. Different specimens of fusel oil appear to vary in the nature and quantity of their constituents. The specimen just examined contains but a very small quantity of the fatty acids.—*Journal of the Franklin Institute, June, 1853.*

## ON THE STATE OF PHARMACY IN GERMANY AND PRUSSIA.

By M. BUSSEY.

(Concluded from page 333.)

### THE CONCESSIONS.

In Prussia the mere diploma of pharmacist is not alone sufficient to entitle its possessor to carry on business; it is necessary that he should obtain special authority to do so—a concession—as it is termed. Formerly these concessions were absolute privileges exclusively in favor of those who had obtained them, but at the present time they are so no longer, the government having reserved to itself the right, which has been confirmed by usage for some considerable time, of granting permission for the establishment of new pharmacies wherever it may appear desirable, and without regard to existing concessions.

There are several classes of privileges:

1. The absolute privilege, "real privilegium," which has existed until recently, and in virtue of which the government has no power to authorize the establishment of new pharmacies in places where privileged pharmacies were already in existence. The "real privilegium" is now abolished in Prussia, and throughout almost the whole of Germany.

2. The limited privilege, which differs from the above only in the circumstance that the government has the power, when it appears desirable, to grant new privileges without being in any way bound to indemnify those pharmacists who already possess the privilege. All the pharmacists who possess the "real privilegium," are in point of fact subject to this condition.

3. Besides these, there are the concessions, which refer to the establishment of new pharmacies; they are a kind of privilege possessing a more personal character than the preceding ones. Thus, the limited privilege may be sold or transferred to another person, without any intervention of the government; it is only necessary to have been admitted as a pharmacist by examination, to have a right to purchase and make use of it. This privilege is in some sort attached to the business itself, and admits of being mortgaged.

The concession, on the contrary, is essentially personal; it is not legally and necessarily saleable and transferable like the restricted privilege, it cannot be ceded by one person to another without the intervention of the government authorities. The pharmacist possessing a concession, and who is desirous of selling his business, is obliged to inform the government of his intention, and to present a successor who shall be considered appropriate.

In all practical cases there is but little difference in the modes of transferring pharmacies, whether the business is carried on under a privilege or a concession, the government having hitherto always given their consent in a very liberal manner to the sale of pharmacies carried on under concessions.

Thus, the only difference which exists with regard to the pharmacist who purchases a business under a privilege or a concession, is, that in the former case he is not subjected to any other formality by the government than to present his diploma and take the necessary oath, while in the latter case it is neces-



sary, besides this, to obtain a transfer of the concession in favor of himself. This, however, does not involve any great difficulty.

In some of the German States, however,—the grand duchy of Baden, for example—the intervention of the government in the transmission of concessions is more than a mere formality, for in these states the administration nominates the successor. In this case, the pharmacist resigning his business cannot demand more than the value of the stock in his shop, according to the valuation of a competent person. Thus, whoever succeeds in this manner to the business of a pharmacist, gains, together with the concession, the advantage of his predecessor's connexion. Here, likewise, there are in practice several modifications, which to some extent lessen what would appear to be a measure of extreme rigor; but these modifications, whatever they may be, cannot entirely do away with the arbitrary character of this legislation.

When the business of a pharmacist passes by heritage, by purchase, or otherwise to a person who does not possess the title of pharmacist, he is obliged to dispose of the business within the space of one year to a qualified pharmacist, and during this time it must be carried on by a sworn manager.

The widow of a pharmacist is permitted to carry on the business of her husband, under the direction of a manager, until the children attain their majority.

The extent of the population is generally the ground upon which permission is given to establish a new pharmacy, but there are no positive regulations with regard to this point. The number, which appears to be tacitly recognized by the government and confirmed by custom is, for the dense population in towns one pharmacist to every six thousand inhabitants; for rural populations the proportion of pharmacists is more considerable. Within this limit the government does not countenance the establishment of new pharmacies.

There are at Berlin	43	pharmacies for a pop. of 450,000,	or 1 to 10,465
Leipsic	4	"	55,000* "
Dresden	10	"	90,000 "
Hanover	4	"	30,000 "
Frankfort	10	"	60,000 "
Mayence	7	"	35,000† "
Cologne	15	"	95,000 "
Aix-la-Chapelle	7	"	50,000 "

\* A new pharmacy is about to be established in Leipsic.

† Besides a garrison of about 15,000 men.

In the towns belonging to the Rhenish provinces, it will be seen that the proportion of pharmacies is much greater than in the former. This is a consequence of the occupation of the country by the French, and of the régime introduced by them. But it is presumed to be the intention of the administration not to permit the establishment of any new pharmacies, until the national increase of the population shall have brought them into the same proportion as in the other provinces.

In those parts of Germany where the ancient privileges still exist, the government has sometimes experienced difficulty in establishing new pharmacies.

At Leipsic, the authorities having recently announced their intention to grant a new concession for a new pharmacy, the four pharmacutists in business there regarded this measure as a violation of the privilege, and opposed it. The Saxon government was obliged to compromise the matter with them, and it has been arranged that the first and second pharmacy that is established, besides the four already existing, shall belong to the pharmacutists of the town, who will conduct them by means of managers, or sell them to pharmacutists possessing a concession; and that, for this advantage, the government shall have the right, at a later period, when the wants of the population call for it, to grant a third or even a fourth concession.

When an application is made for a concession, it is always the local authority, the "burgomeister" or mayor, who takes the initiative; he consults the "physicus" of the district upon the subject. When the inspector and municipal authorities are unanimous in their opinions as to the necessity for a new pharmaceutical establishment, the application is addressed to the medical board of the province. When the reasons assigned are found upon inquiry to be sufficient to justify the application, the board gives an opinion favorable to the applicant, if there are not already any pharmacutists in the locality, or if those already established have no valid objection to offer.

The circumstances which are most especially taken into consideration with regard to the establishment of a new pharmacy, are, any considerable increase in the population or wealth of the district in question. According to the terms of the regulation of January 17th, 1845, the concession is granted by the superior President of the province.

The ministerial instructions of the 13th of July, 1840, indicate the course to be pursued when several applicants compete together for the same concession; so that, as far as it is possible to judge, the concession may be granted to the most worthy applicant—the one who presents the greatest guarantee of competence; but there is no fixed rule with regard to this, and whatever precautions the superior administration may adopt, it is difficult to prevent some degree of partiality in the granting of concessions. It is, moreover, impossible to avoid the suspicion of partiality, notwithstanding the confidence placed in authority in Prussia. I have been assured that there is no lack of instances in which persons, having obtained concessions through interest, instead of making use of them themselves, have, after a short time, sold them, and realized sums of from thirty or forty to fifty thousand francs. Whatever may be truth of these statements; it cannot but be acknowledged that this part of the system is very defective, and, according to the opinion of all competent persons, stands greatly in need of reform.

But even supposing that the choice of the government is perfectly appropriate, that the concession is always given to those who, in their examinations, have shown themselves to be the most competent, to those who, in all respects, really merit the preference, the successful applicant always gains an advantage which is not justified by the circumstances, or which is at least out of all proportion to the merit which he may be supposed to possess. It is conceivable that the government should confer such a privilege as a national recompense for great public services; but it does not appear why such a privilege should be the recompense for having merely passed an examination with greater or less success. In order to be just towards pharmacutists, and at the same time to exonerate the government from the responsibility thrown upon them by the necessity of choosing between several rival candidates, it would appear to be more appropriate, whenever the wants of the population called for the establishment of a new pharmacy, that the government should compel the pharmacutists of the locality to establish the business for their own profit; and that the government should restrict itself to granting a concession to the pharmacist who should present himself as the owner of the new business.



In those countries where, as in Prussia, the number of pharmacutists is limited, and the price of medicines regulated by authority for the entire kingdom, the pharmacutists may be regarded as adventurers who at their risk and peril provide the public with medicines. If the population decreases they have to bear the concurrent diminution in their income—a depreciation of their property of which no account is taken. Consequently it appears just, if the population increases, that they should not be deprived of the benefit of that increase, and that if it is requisite to establish a new pharmacy for the service of the public, that it should be established by them and to their profit.

#### TAKING THE OATH.

The pharmacutists in Germany are bound to take an oath upon commencing business. This oath is taken before the “Kries Physicus,” who administers it. The oath is likewise required by the French Government; but the practice has either fallen into disuse or is not fulfilled in such a manner as to effect the desired result. In most instances it is a mere formality which resolves itself into a certification that the oath has been taken appended to the diploma by a subordinate official, and frequently there is not even any mention made of the oath. Nevertheless, if there is any profession in which an appeal to the conscience of those who exercise it is necessary, it is certainly that of the pharmacutist. It is too often forgotten that in the practice of his art the pharmacutist, in spite of the severity of the laws which relate to him, may very readily fail in the fulfilment of his duties, that in such cases there are frequently no other witnesses of his acts but himself, and no other judge but his conscience. To it, therefore, must be directed in the first instance any attempts of preventing such dereliction of duty, without, however, abandoning the means of repression provided by the law. It would, therefore, be desirable to re-establish the ceremony of taking the oath—to attach to it even a certain solemnity, and whatever else might tend to insure that moral influence which is sought to be exercised.

Certain definite periods might be fixed for this ceremony, such as the opening of the schools of pharmacy, when the oath might be taken in the presence of the assembled professors and a cer-

tain number of pharmacutists, specially convoked for the purpose.

In places remote from the schools the oath might be administered with the same forms by the President of the tribunal of the district.

If the ceremony of taking an oath is allowed to be of any influence, this ought assuredly to attach to such a one as is taken in the presence of the profession, of the body charged with the supervision of the practice of pharmacy, of the magistrate whose duty it is to prosecute and punish any who may be guilty of infractions of the laws relating to the profession ; but in the manner that it is observed at the present time this ceremony is but an empty formality, to which the pharmacist who is supposed to take it attaches no more importance than the functionary who ought to receive it.

#### THE TARIFF FOR THE SALE OF MEDICINES.

The limitation of the number of pharmacutists necessarily involves the establishment of a fixed price for medicines. These prices are agreed upon and regularly revised every year by a commission appointed for that purpose by the government. If the price of any important drugs undergo any considerable alteration, the commission make a corresponding alteration in the price of medicines prepared with them. These alterations are published by the government, which is likewise bound to transmit to the commission the current price of drugs, chemical products, and all the data which are likely to be useful in constructing the tariff.\* The pharmacutists are compelled to adhere strictly to the prices laid down in the tariff. Generally speaking, they fulfil this duty faithfully. In any case, the detection of any false charge would be very easy, for the pharma-

\* The tariff includes not only the price of simple medicines, but likewise the charges for manipulations.

The Prussian tariff, which is especially alluded to here, is not adopted throughout Germany. It varies like the Pharmacopœia in each State, and frequently within very circumscribed localities. These differences in the price of medicines have recently been taken into consideration by the pharmacutists, and at a congress held at Frankfort, on the 23d of September, 1852, to which all the pharmacutists of Germany were convoked, it was seriously discussed whether petitions should not be addressed to the different governments for the establishment of one uniform tariff and pharmacopœia for the whole country.

centist being required to write upon the prescription the price of the medicine, he thus, if he makes too high a charge, writes his own merited condemnation.

In case of any overcharge being made—which is, however, very rare—the pharmacist has to pay a fine, the amount of which depends upon that of the overcharge. It varies, moreover, in different states, but is also proportionately heavier when the overcharge is considerable. It is obvious that in the face of such a simple means of detection, the pharmacist will not willingly venture to lay himself open to the infliction of a penalty, which may be attended with a loss of his concession.

The pharmacist is not allowed to make a charge below the tariff any more than above it. The law having by the Pharmacopœia fixed the composition of each medicine, the mode of preparing it, and such a value as leaves to the pharmacist a reasonable remuneration for his labor, does not recognize the possibility of his selling them for less than the regulated price without deteriorating their quality. He is not indeed prevented from exercising charity, but he must not, in the exercise of his profession, commit any act which would afford grounds for suspicion.

Such a tariff certainly appears to be a most arbitrary imposition when regarded in the light in which we are accustomed in France to look upon free competition in all matters of industry and commerce. But if the question is examined apart from any prejudice in favor of that principle of liberty which obtains in our commercial legislation; if, without any preconceived ideas on the subject, it is examined in a practical point of view and with regard exclusively to the interests of the public, it will not be difficult to arrive at a conviction that the system of restricted liberty adopted in Germany for the sale of medicines is preferable to that of absolute liberty which exists in France. In fact, free competition, such as is generally practised in commerce, is altogether inapplicable to Pharmacy, and may produce, as it has done in commerce, the most disastrous results.

The advantages which are attributed to competition in affairs of industry and commerce are the greater cheapness and improvement of the products. But the possibility of excelling others in advancing any branch of industry and selling at a



lower price than others, when that cheapness is not, as is too frequently the case, anything more than the result of fraud or falsification, necessarily pre-supposes that the means of fabrication, the capability of employing whatever materials may be judged suitable, and the selection of such process as may be the most economical, are entirely subject to the will and judgment of the individual.

None of these elements of rational and honest competition are available for the pharmacist. The composition of medicines is regulated by the codex. The pharmacist must conform to its directions not only in regard to the quality, number, and quantity of substances which he employs, but likewise with regard to the process for making them. It is, therefore, physically impossible that he can effect any licit or allowable saving in their fabrication. This necessity of conforming to the codex excludes any idea of alteration, and likewise excludes any idea of improvement which the pharmacist might otherwise put forward as a plea to his customers for such alteration. Perfection for him in the practice of his art consists in strict adherence to the directions of the codex, in the fulfilment without parsimony and with absolute exactitude the prescription of the medical man. There is no possibility, as in ordinary industrial pursuits, of increasing the sale of his products, or of forcing their consumption by taking advantage of the appetite for cheapness, and compensating for the small profit by a larger return.

It may be easily understood that the cheapness of any commodity increases its consumption; that it may be a reason for applying it to a greater number of purposes, or for its use by a greater number of persons; but the cheapness of a medicine will never be a sufficient attraction to induce persons to make use of it except in cases of strict necessity. The most valuable medicines might be offered gratuitously without a grain more being consumed. The pharmacist has not even a right to sell his goods to any one who may wish to buy them; he dares not do so without the authority of a physician's prescription.

In the duties attached to such a profession it is impossible to recognize any circumstance which resembles the conditions under which ordinary industry is exercised, nothing which could suggest the application of the same principles.

We have examined free competition only with regard to the advantages which are attributed to it. It presents likewise certain inconveniences which are inseparable from it. There can be no doubt that reduction of price is an inevitable consequence of competition, that this reduction necessarily causes a deterioration in the quality of commodities, and that it is the most efficacious cause of all the frauds and adulterations which are practised in commerce. It is true that these frauds, though culpable in a moral point of view, are not always of great importance to the buyer; when practised upon materials of clothing and general manufacture, the difference is merely in the durability or the intrinsic value of the article, a difference which may perhaps be compensated for, wholly or in part, by the cheapness. But when the fraud is practised upon alimentary substances, and above all upon medicines, in which latter moreover it is as difficult to recognize adulteration as it is easy to practise it, the subject acquires a gravity which will not admit of any compensation; it is the duty of the Government to take every means for its prevention.

Matters of industry and commerce are, in fact, matters of money; those which relate to the sale of medicines are of importance to the public more in regard to health and life than pecuniarily.

The Prussian legislature, by rendering in pharmacy the commercial question subordinate to the medical, by preventing competition, which inevitably leads to the sale of bad medicines, by regulating for the sick the price of drugs whose value or quality they are ignorant of, contributes more effectually to the true interests of the public than if it had allowed the practice of pharmacy to be governed by the principle of unrestricted freedom.

#### THE MANAGEMENT OF PHARMACEUTICAL ESTABLISHMENTS.

It would be very far from the truth to suppose that the system upon which pharmacy is carried on in Germany in any way tends to diminish the spirit of emulation among the pharmacutists of that country, to introduce negligence in the management of their business, or to lower the character of the educational studies.

With regard to the general manner in which the business is conducted, it is difficult, except from actual inspection, to form any conception of the order, quiet and regularity which are maintained in a German pharmacist's shop. These establishments

never presents that superfluity of exterior decoration which in other countries fixes the attention of the passers; a simple inscription, sometimes, perhaps, a sign placed over the entrance, scarcely distinguishes the pharmacy from the neighboring dwelling-houses; within all is quiet and orderly, as is accordant with the nature of the business. Several assistants are engaged in the preparation of medicines, one person only, and most frequently the principal, being engaged with the customers; he receives the prescriptions and distributes them among the assistants for preparation. When the medicines are completed, they are examined by the principal, to ascertain whether they agree with the prescriptions. In many shops the customers are not admitted into the place where the medicines are prepared, but remain in a kind of ante-room or vestibule. In the less extensive establishments there is always a small space, a kind of office, reserved for the preparation of medicines. The pharmacist is compelled by the regulations to write upon each label the name of the person, the date, and the mode of administering the medicine. In some States it is customary to make use of colored labels for external applications, so as to make a more marked distinction between them and others, than is effected by a written label.

As the pharmacutists in Germany are required to prepare the greater part of the substances sold by them, and as most of the pharmaceutical establishments in large towns are on a very extensive scale, they are provided with well arranged laboratories, in which steam is very ingeniously employed as a source of heat for the preparation of infusions, decoctions, distilled waters and extracts, for evaporation, and in short all the operations which require the aid of a moderately elevated temperature. These laboratories likewise contain very efficient chemical and mechanical apparatus.

The difficulty of creating new establishments prevents many men of experience from meeting with suitable positions as principals, and this circumstance likewise ensures the capability of the assistants in the pharmacies.

#### INSPECTION OF PHARMACEUTICAL ESTABLISHMENTS.

The inspection of pharmacies is provided for by the Prussian law; each one must be visited at least once every three years, and more frequently if the inspectors should think it requisite.



The visits of inspection are made in the presence of the "kreis physicus," by one or more pharmacutists generally selected for the office from some other neighborhood.

The pharmacist whose shop is inspected is bound to submit to the inspectors his concession, his diploma, the legal pharmacopœia, the tariff of medicines, the regulations referring to the exercise of the business, together with the most recent alterations which have been made, further the journal of the laboratory work, an account of poisons sold, an herbarium of indigenous officinal plants, and a packet of prescriptions with the prices of the medicines affixed. The assistants are required to produce their certificates of apprenticeship, to answer questions relating to pharmacy or chemistry, and to explain a passage in the Pharmacopœia. The apprentices are also examined, with a view to ascertain their capacity and acquirements, due allowance being made for the length of time they have been receiving instruction.

These visits or inspections generally occupy several days, and it will readily be understood that they require some time. In addition to the above-mentioned particulars, the whole of the medicines included in the tariff are submitted to chemical examination by the inspectors, who carry with them the requisite chemical re-agents. The pharmacist has to pay about six shillings for the cost of re-agents, and has, moreover, to bear the expense of the extraordinary visits which the inspectors may think fit to make. Minutes of the inspection are taken and transmitted to the "medicinal rath," whose duty it is to institute proceedings against such pharmacutists as may be found to have infringed the law—a circumstance, however, which very rarely occurs. In any case the "medicinal rath" addresses to the pharmacist who has been visited an official letter, containing a résumé of the report made to him, adding at the same time any remarks of compliment, advice or reprimand, which he may consider necessary.

The reports made by the inspectors are sometimes very minute, and show how far the examination has extended, and the degree of care with which it has been executed. The following is an extract from the official letter, addressed by the "medicinal rath" to a pharmacist on the occasion of an inspection of his shop:

“The concentrated sulphuric acid had a density of only 1.832; the extract of belladonna was not entirely soluble in water; the hydrated peroxide of iron contained a small quantity of chlorine; the iodide of potassium contained a trace of iodate; the loft appropriated to the drying of plants is not sufficiently ventilated, it requires an additional window; the herbarium is not kept and arranged in a proper manner; the inspectors have not found the Military Pharmacopœia in your shop; your apprentice does not possess a sufficient knowledge of the Latin language—you should pay attention to his improvement in this respect,” &c.

These passages will be sufficient to give an idea of the attention which is directed by the inspectors, not only to the nature of the medicines themselves, but also to everything relating to the good management of the business.

The regulations laid down by the Prussian laws for the inspection of pharmacies, are, upon the whole, analogous to those observed in France, but there are some peculiarities in the practical details which are deserving of notice.

The French law makes no mention of anything besides the examination of medicines, omitting altogether the pupils, the general state and management of the shop and laboratory.

The establishment of an herbarium in each pharmacy would be very desirable in France, inasmuch as it would encourage the study of botany by the pupils, a subject which is now too much neglected. It would, moreover, be of practical utility. A well arranged herbarium of officinal plants would very frequently be of service to the pharmacist in ascertaining, by comparison, whether the drugs obtained in commerce are really the true species.

The most important of all the provisions of the Prussian law relating to the inspection of pharmacies, is, without doubt, that which empowers the medical legislative authorities to address to the pharmacutists such observations as they may deem necessary from the result of the inspection. Commendation or censure thus officially expressed by a superior and competent authority, perfectly well informed as to the particulars of the case, are far more effectual means of keeping the pharmacutists in the faithful exercise of their duties, than an inflexible law which would leave to the inspectors only the choice of one or other

penalty, and would admit of no intermediate course between a tacit approbation and a legal prosecution. There are, however, a multitude of circumstances relating to the management of a pharmacy, or the quality of medicines, which may call for notice, instances of involuntary negligence, which, if tolerated, might ultimately prove injurious to the public, although not of sufficient gravity to justify the institution of legal proceedings against the pharmacist. Admonition is, indeed, sometimes given by the inspectors themselves; but being merely verbal, and wanting in any kind of legal recognition, is not so likely to produce the desired effect.

#### SECRET REMEDIES.

After what has already been said, it is scarcely necessary to state that the pharmacists of Germany are interdicted from selling or announcing for sale any secret remedy; nevertheless they sometimes furnish these remedies on the authority of a physician's prescription.

In France the law with regard to this point is the same, but it is not carried into effect. A decree of the 18th of August, 1810, prescribed the conditions which were to be observed in making known the formulæ for new and useful remedies. But the wise provisions of this decree have not been taken advantage of. Instead of following them out in their strictest sense, the legislature has reserved the dangerous right of granting to certain inventors an authority to vend and advertise their medicines. The granting of these privileges, to which is attached a pecuniary consideration, far greater than that of a pharmaceutical concession in Germany, is not subject to any conditions. Neither the medical collegiate bodies nor the juries charged with the supervision of pharmaceutical affairs, are consulted on the occasion. And further, these privileges have the great objection of being unlimited in duration; so that, even at the present time, there are being sold, under the sanction and patronage of the government, the vilest compounds, which are both antiquated and inferior to any that can be prepared by a rational application of pharmaceutical knowledge, but which have acquired a certain *prestige* in the eyes of the vulgar, from the government sanction, and more especially from the mystery in which they are enveloped.



## THE SALE OF POISONS.

The provisions made by the Prussian law for the sale of poisons, closely resemble those which obtain in France. They must be kept in separate closets, and not sold except under certain conditions, to persons free from suspicion, provided with a due authority, and for determinate purposes, under a penalty of 3000 francs. A poisonous substance, when sold by a pharmacist, must be enclosed in a box tied and sealed. On the exterior the name must be written in German or French, and Latin, according to the locality, with the addition of three crosses, or a label with a death's head.

In some States of Germany it is necessary, besides the above precautions, for the receiver of the poison to give a receipt, to which he affixes his seal, and running thus: "I the undersigned declare that I have received from the pharmacy of M. ———, (name and quantity of the poison,) packed according to the regulations, labelled and sealed (use to which it is to be applied); and I make myself accountable for any accident this drug may occasion."

## THE DRUGGISTS.

The Druggists in Germany are not allowed to sell any compounded medicine, although they are at liberty to sell simple drugs. They may not sell medicinal drugs by retail.

It is impossible to fix rigorously the limit between retail and wholesale; and in order to obviate the difficulties to which such an uncertainty would give rise in practice, the government has published a list of the drugs which may be sold by Druggists in any quantities, and a list of those which must not be sold by them below a certain weight.

## HOSPITALS.

With very few exceptions the medicines required for hospital use are prepared by the pharmacists of the town.

The larger hospital at Berlin is provided with medicines by the king's pharmacist, and they are prepared under the direction of M. Wittstock.

The prices of medicines for hospitals, or for charitable institutions, is based upon a tariff, upon which the contractor agrees to make a certain reduction. Very frequently the one who

makes the greatest reduction is chosen, but sometimes they are furnished successively by the several pharmacutists of the town, and under the same conditions.

In the preparation of these medicines the legal pharmacopœia is generally followed; however, many hospitals and charitable institutions have particular formulæ; thus, for instance, there is a pharmacopœia for the paupers of Mayence, entitled, "Formulare Medicum pro pauperi Maguntinis."

Independently of these necessary and appropriate reductions, pharmacutists are frequently required to make a reduction in their charge for medicines, upon the simple suggestion of the physician; who, for that purpose, writes upon the prescription, "PP., pro pauperi."

#### RÉSUMÉ.

It will be seen from the above account that Pharmacy in Germany is regulated by an essentially preventive legislation; it constitutes a species of organized public service, subject to the supervision of a minister and a special administrative body, who do not for an instant lose sight of the interests of the public in everything that relates to the preparation and sale of medicines. The two most important features of this organization, are, the limitation of the number of pharmacies, and the establishment of a fixed scale of prices for medicines. It is these two provisions, the latter of which is in truth but a consequence of the former, that peculiarly distinguish the Prussian pharmaceutical law from that of France.

The limitation of the number of pharmacies as it exists in Prussia, is not absolute. The government no longer grants exclusive privileges to pharmacutists, but merely concessions, reserving at the same time the right of increasing their number to such an extent as the necessities of the population may demand.

Hitherto the government have exercised this right with extreme reserve, and in such a manner as to lead to the opinion that it is not their intention to increase the number of pharmacies. Moreover, as public opinion and custom are in favor of this limitation, things may remain for a long time in their present condition; but this *statu quo* is very probably the result of

habits acquired as a necessary consequence of the legislation relating to pharmacy.

It is very easy to perceive that a similar limitation with such a reserved power in the hands of the government, would, when adopted in a country governed by such principles of liberty as obtain in France, neither be attended with the dangers which are feared, nor with all the advantages which might be anticipated from it, for it would in reality be almost equivalent to a state of absolute liberty.

It would indeed be very difficult, not to say impossible, that any government left to its own free exercise, without any precise course of action laid down beforehand, without any administrative traditions with regard to the matter, could long offer any resistance to the solicitations of those who might demand the establishment of new pharmacies, or to the pressure of opinion, always disposed in France to the view that the public is interested in the extension of professions, and in competition between those who belong to them. In order that the limitation of the number of pharmacies in France should be attended with any serious results, especially if it was accompanied by the application of a tariff, it would be absolutely necessary not to leave the matter, as in Prussia, to the decision of an administrative body, but that the law itself should lay down, in a precise manner, the conditions of such limitation.

In regard to all points which do not directly relate to the limitation and the tariff, the provisions of the French and Prussian legislation differ but slightly. They both tend to the same object, and almost always by the same means. There is, however, a fundamental difference in the mode of their application; for, according to the Prussian system, the supervision being more complete, more constant, more comprehensively organized, the power of the administration being better established and more extended, it is possible to prevent the commission of many offences which it is necessary in France to refer to the legal tribunals.

But by instituting a legal prosecution against a pharmacist a severe blow is given to his reputation, and recourse cannot be had to such an extremity without some very efficient grounds; consequently, many circumstances which are not without some



importance, escape notice altogether, actually by reason of the severity of the law. If, however, there is any case in which it is more desirable to prevent offences than to punish, it is certainly the present one. It would, therefore, seem fit, to render the supervision of pharmacy more efficacious, to introduce into the measures adopted with this view consistency and completeness, to give to the body charged with this supervision a moral influence which it has never yet possessed, and a certain degree of authority which would in many cases obviate the necessity of having recourse to the legal tribunals.

Among the several points of detail which the exercise of pharmacy in Germany suggests, I will confine myself to mentioning those provisions whose introduction in France appears desirable, and which are, moreover, in accordance with the general spirit of of legislation in that country :

The separation of pupils into two classes, those properly so called, and assistants (*aides*); the administration of the oath under conditions which would render this simple formality a serious matter; the establishment of an inspection of pharmacies not only with regard to medicines, but likewise to the entire management of the business and the laboratory; to require each pharmacist to keep an herbarium of officinal and other plants used in medicine; that an abstract of the reports made to the authorities on the occasion of inspections, should be addressed in an official manner to each pharmacist, and that these reports should furnish an opportunity of direct communication between the administrative body and the pharmacists; the introduction of stricter regulations with regard to secret remedies; lastly, the introduction of written theses and chemical analyses into the examinations.—*Pharmaceutical Journal*, from *Journal de Pharmacie*.

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#### ON THE OIL OF HOPS.

BY DR. RUDOLPH WAGNER.

The ethereal oil of the female flowers of the hop plant (*Humulus lupulus*) is quite unknown with regard to its technical importance. A superficial examination by Payen and Clievallier has been the source of innumerable errors with reference to the

properties of oil of hops. It has been believed, in consequence of this examination, that the oil resembled oils of mustard, assafœtida, &c., and belonged to the ethereal oils containing sulphur; that it dissolved largely in water, and on this account preserved the beer, and that it acted partly as the narcotic ingredient of beer and of hops.

The following research conducted by me with oil carefully prepared by Hertel, shows that the deductions of Payen and Chevalier are incorrect. The oil was distilled from fresh hops with water, and constituted about 8 per cent. of the hops, which were dried in the air. It was of a clear brownish yellow color, possessed a strong odor of hops, and had a slightly bitter taste analogous to thyme and origanum. Its specific gravity was  $\cdot 908$  at  $61^{\circ}$  Fahr. It scarcely reddened litmus paper, which, when moistened with the oil and exposed to the atmosphere for a considerable time, assumed a decisive red color. A small quantity shaken with water dissolved in such a small degree that the water only had the odor of the oil. It requires more than 600 times its weight of water for its solution.

It was examined for the purpose of ascertaining whether it contained sulphur, but with a negative result. The oil rendered anhydrous by distillation over fused chloride of calcium, evaporates partly at a temperature below the boiling point of water. It begins to boil at  $257^{\circ}$ , the boiling then rises to  $347^{\circ}$ , where it remains stationary for some time, and at which nearly one-sixth of the oil distils over. The first distillate (A) was colorless, clear as water, and possessed a slight odor of hops, but more resembled rosemary. The portion (B) passing over between  $347^{\circ}$  and  $437^{\circ}$ , and constituting one-half of the oil, was also very clear, and had the odor of the crude oil. That which passed over between  $437^{\circ}$  and  $455^{\circ}$  was colored yellowish. The residue in the retort, about one-sixth of the oil, was brownish and like turpentine. It is, therefore, evident that oil of hops is a mixture of oils. The crude oil did not give, with an ammoniacal solution of silver, a metallic mirror. It is not, therefore, an aldehyde. When mixed with an alcoholic solution of potash the oil becomes brown, and by distillation the mixture affords alcohol and an oil with the odor of rosemary. After the greatest part of the oil and spirit has distilled over, a violent evolution of gas ensues, probably hydrogen,

and carbonate of potash remains, mixed with a potash salt of a volatile fatty acid. The odor which the acid evolves when set free from the potash with diluted sulphuric acid, leads to the conclusion that this acid is a mixture of caprylic and pelargonic acids.

The oil which passed over during this reaction, and resembles the previously mentioned one (A), boils between  $347^{\circ}$  and  $356^{\circ}$ , and has the formula  $C_5H_4$ . It, therefore, belongs to the large class of camphenes.

The portion B of the crude oil was subjected to fractional distillation, and the part which passed over at  $410^{\circ}$ , during which the thermometer was constant for a short time, consisted of  $C_{20}H_{18}O_2$ . This oxygenated oil is in the crude oil undergoing continuous oxidation, and dries, when exposed in a watch glass to the air, at last to a gummy mass.

This oil is isomeric with Borneo camphor, oils of cajeput and bergamot, and with the aldehyde of campholic acid  $C_{20}H_{18}O_4$ .

I have made, in conjunction with Dr. Bibra, researches on animals, to ascertain whether the oil of hops has a narcotic action, and find that it has no such action.—*Journal fur Praktische Chemie, from Annals of Pharmacy, June, 1853.*

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## ON THE ESSENTIAL OIL OF LEMONS.

By JOHN S. COBB.

(Read before the Chemical Discussion Society.)

I have recently made some experiments with oil of lemons, of which the following is a short account:—

Being constantly annoyed by the deposit and alteration in my essence of lemons, I have tried various methods of remedying the inconvenience.

I first tried redistilling it, but besides the loss consequent on distilling small quantities, the flavor is thereby impaired. As the oil became brighter when heated, I anticipated that all its precipitable matter would be thrown down at a low temperature, and I applied a freezing mixture, keeping the oil at zero for some hours. No such change, however, took place.

The plan which I ultimately decided upon as the best which I had arrived at, was to shake up the oil with a little boiling water,



and to leave the water in the bottle; a mucilaginous preparation forms on the top of the water, and acquires a certain tenacity, so that the oil may be poured off to nearly the last, without disturbing the deposit. Perhaps cold water would answer equally well, were it carefully agitated with the oil and allowed some time to settle. A consideration of its origin and constitution, indeed, strengthens this opinion; for although *ol. limonis* is made both by distillation and expression, that which is usually found in commerce is made by removing the "flavedo" of lemons with a rasp and afterwards expressing it in a hair sack, allowing the filtrate to stand, that it may deposite some of its impurities, decanting and filtering. Thus obtained it still contains a certain amount of mucilaginous matter, which undergoes spontaneous decomposition, and thus (acting in short, as a ferment) accelerates a similar change in the oil itself. If this view of its decomposition be a correct one, we evidently, in removing this matter by means of the water, get rid of a great source of alteration, and attain the same result as we should by distillation, without its waste or deterioration in flavor.

I am, however, aware that some consider the deposit to be modified resin.\* Some curious experiments of Saussure have shown that volatile oils absorb oxygen immediately they have been drawn from the plant, and are partially converted into a resin, which remains dissolved in the remainder of the essence.

He remarked that this property of absorbing oxygen gradually increases, until a maximum is attained, and again diminishes after a certain lapse of time. In the oil of lavender this maximum remained only seven days, during each of which it absorbed seven times its volume of oxygen. In the oil of lemons the maximum was not attained until at the end of the month; it then lasted twenty-six days, during each of which it absorbed twice its volume of oxygen. The oil of turpentine did not attain the maximum for five months, it then remained for one month, during which time it absorbed daily its own volume of oxygen.

It is the resin formed by the absorption of oxygen, and remain-

\* The deposit is nearly insoluble in water, is acid and astringent to the taste, and gives an acid reaction with litmus. Spirit of wine dissolves out a small portion, which, on evaporation, leaves a thick oleo-resinous substance, having a rancid smell. Ether leaves a pleasant smelling resin, somewhat resembling camphor. The remainder is nearly insoluble in *liq. ammoniæ*, *liq. potassæ*, more soluble in nitric acid, and well deserves to be further examined.

ing dissolved in the essence, which destroys its original flavor. The oil of lemons presents a very great analogy with that of oil of turpentine, so far as regards its transformations, and its power of rotating a ray of polarized light. Authorities differ as regards this latter property. Pereira states that the oil of turpentine obtained by distillation with water, from American turpentine, has a molecular power of right-handed rotation, while the French oil of turpentine had a left-handed rotation. Oil of lemons rotates a ray of light to the right, but in France a distilled oil of lemons, sold as scouring drops for removing spots of grease, possesses quite the opposite power of rotation, and has lost all the peculiar flavor of the oil. Oil of lemons combines with hydrochloric acid to form an artificial camphor, just in the same manner as does oil of turpentine, but its atom is only one half that of the oil of turpentine. The artificial camphor of oil of lemons is represented by the formula,  $C_{10} H_8 H Cl$ ; the artificial camphor of oil of turpentine by,  $C_{20} H_{16} H Cl$ .

According to M. Biot, the camphor formed by the oil of lemons does not exercise any action on polarized light, whilst the oil of lemons itself rotates a ray to the right. The camphor from oil of turpentine, on the contrary, does exercise on the polarized ray the same power as the oil possessed while in its isolated state, of rotating to the left. These molecular properties establish an essential difference between the oils of turpentine and lemons, and may serve to detect adulteration and fraud. It is also a curious fact, that from the decomposition of these artificial camphors by lime, volatile oils may be obtained by distillation, isomeric with the original oils from which the camphors were formed; but in neither case has the new product any action on polarized light.

In conclusion, I would recommend that this oil, as well as all other essential oils, be kept in a cool, dark place, where no very great changes of temperature occur.—*Annals of Pharm.* Feb. 1853.

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#### ON THE PREPARATION OF TANNIC ACID.

On testing the method prescribed in the Prussian Pharmacopœia, for the preparation of tannic acid, Sandrock finds that it does not fulfil the desired object. In directing that water should be added to the ether employed, the authors of the Pharmacopœia

would appear to have aimed at an approximation to the method originally adopted by Pelouze, in which crude ether was used; and to have assumed that when watery ether is used, the lower layer of the percolated liquid is a solution of tannic acid in water. However, Mohr found that this is not the case, but that the lower layer is a solution of tannic acid in ether; and Sandrock has obtained the same result on repeating his experiments. The addition of water to the ether is, therefore useless, and moreover injurious, for the solution of tannic acid in ether is so thick that the percolation goes on very slowly, and sometimes stops altogether. The use of pure ether is open to the same objection.

The extraction of the tannic acid from galls may on the contrary be effected with ease by the crude ether, and on account of the small quantity of alcohol which it contains. The alcohol facilitates the percolation by rendering the solution of tannic acid less viscid.

Instead of crude ether a mixture of sixteen parts ether and one part alcohol may be used with equally satisfactory results. The percolated liquid separates into two layers. The lower one containing the tannic may easily be separated, and yields a perfectly pure product on evaporation. The upper layer contains the gallic acid, coloring matter, and some tannic acid.

When a mixture of eight parts ether and one part alcohol is employed, the percolate still separates into two layers, but the lower one is smaller than when the proportion of alcohol is less, and the upper layer contains a considerably larger quantity of tannic acid.

Finally, when a mixture of four parts ether and one part alcohol is employed, the percolate does not separate into two layers, and it is difficult to separate the tannic acid from the impurities with which it is mixed.

By means of the above process a much larger product of tannic acid may be obtained than with either pure or watery ether. The tannic acid remaining in the upper layer may likewise be obtained by evaporating the liquid to dryness, treating the residue with pure ether, until the lower of the two layers into which the liquid separates no longer presents a green color. It is then separated, filtered, if necessary a little alcohol added, and evaporated.

The process recommended by Mohr, of treating the galls with a mixture of alcohol and ether in equal volumes, than evaporating



the percolate which does not separate in layers, and regarding the residue as tannic acid, is altogether inadmissible, as it gives a very impure product.—*Pharm. Journ.* from *Archiv. der Pharmacie*, December, 1852.

### NEW METHOD OF ANALYSIS FOR THE ORGANIC POISONS.

By C. FLANDIN.

The author commences by laying down the principles on which he supposes the action of poisons may be explained:—1. Poisons are unassimilable substances. 2. They pass into the organism by absorption. 3. Their action is that of presence.

If these principles be correct, it follows that all poisonous substances, *whatever they may be*, must be found in the organs with which they have been brought into contact, or to which they have been transported by absorption. In the case of the inorganic poisons, experience has shown that there is no exception to the rule. It still remains to be shown that the same rule applies to the organic poisons.

Christison states, with regard to opium, that as a general rule, the medical jurist can scarcely obtain satisfactory proof of the existence of this substance *by the best methods of analysis at present known*. Now the best methods of analysis known at present for ascertaining the presence of opium, and of the organic proximate principles in general, consist in treating the suspected substances either with acetic acid or alcohol, filtering the liquid, and evaporating it to the consistence of an extract. This extract is then re-dissolved in water, either pure or acidified, and decolorized by animal charcoal, or the animal matters are precipitated as far as possible by various reagents (such as subacetate of lead, sulphuretted hydrogen, nitrate of silver, &c.) Lastly, the extractive matter thus obtained is tested by different reagents, such as nitric acid and perchloride of iron, when it is desired to ascertain the presence of morphine, the active principle of opium. In this way, however, no satisfactory results can be obtained. The poison is not isolated; it is not directly acted upon by the reagents; its characteristic properties consequently cannot be ascertained.

The author considers that animal substances may be divided as follows:—1. Proteine or albuminous substances. 2. Coloring matter. 3. Fatty substances.

The proteine substances are readily coagulable, and in this state they become insoluble in water, alcohol, acids, &c.

The colored or coloring matters are easily changed by various acids and alkaline agents, anhydrous lime and baryta for instance, without mentioning heat.

The fatty substances are separated with ease from all the other matters by alcohol and ether.

Now if any inorganic substance be mixed with organic substances, there is nothing more easy than to discover it. The organic substance is burnt, the inorganic principle is brought to the state of a soluble compound within the cinder, and then extracted with water. The process of carbonization or incineration by means of sulphuric acid for the discovery of the mineral poisons is founded on these very simple data.

But if the substance which it is necessary to separate from animal matters be combustible, or capable of essential modification by heat, the course is not so clear. The following is the process proposed:—

To 100 parts of the substance to be examined, 12 parts of anhydrous lime or baryta are to be added, and the whole pounded together in a mortar. The mixture is then to be heated to  $212^{\circ}$  F., then pulverized, either with the pestle, or with a special apparatus appropriated to this operation, which is very essential; the powder is to be treated with boiling anhydrous alcohol three times, filtering the liquid after cooling. This liquid as it leaves the filter is scarcely colored; it only contains the proximate principle or principles sought for with the fatty or resinous matters.

The alcohol is now slowly evaporated, and the dry residue treated with ether to remove the fatty matters. If the principle be insoluble in ether (morphine, strychnine, brucine,) it will be separated in the fluid, and may be obtained by filtration or simple decantation. If it be soluble in ether, the alcoholic residue or the ethereal fluid must be treated with a special solvent of the organic bases, such as acetic acid, precipitating the base afterwards by ammonia.

To 100 grms. of animal matter, the author added a single grain or 0.05 grm. of morphine, strychnine and brucine; and by operating in the manner just described, succeeded in obtaining, in a state of absolute purity, a ponderable quantity of each of those principles. Instead of strychnine, morphine and brucine, the author

employed crude opium, laudanum, decoction of nux vomica and of false angustura bark ; and in these cases also, he was able to isolate the poisonous principles. He also, in order to assure himself that his process was applicable to medico-legal purposes, poisoned animals with the smallest effective doses of the above-mentioned substances, when he was able to detect the poisons in the matters contained in the stomach and intestines, and sometimes even in organs to which they had been carried by absorption.

In one experiment, he mixed 2 grs. (or 10 centigrms.) of morphine with 100 grms. of flesh, leaving the substances to undergo putrefaction for two months. At the end of this period he discovered several centigrammes of morphine in the mass.—*Chemical Gazette*, from *Comptes Rendus*, March 21, 1853.

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#### PERMANGANATE OF POTASH.

In consequence of the successful use of permanganate of potash in diabetes, under Mr. Sampson, the results of which have been lately published in the *Lancet*, and as it is probable that it will come into more general use, we think a short notice of it will be found useful to our readers.

This salt is formed by the mixture of peroxide of manganese with hydrate of potash ; the resulting salt is, however, more abundant, if chlorate of potash be used in addition.

There are several modifications of the process : that of Chevillot and Edwards is to ignite one part of peroxide of manganese with one part of hydrate of potash, dissolve the resulting mass in water, decant the red solution and evaporate, rapidly at first, till small needles appear, then cautiously, that crystallization may go on regularly. Wöhler's (*Pogg.* xxvii., 626) process is as follows : chlorate of potash being kept in a state of fusion over a spirit lamp, hydrate of potash is first added to it, and then an excess of finely divided peroxide of manganese, which immediately dissolves, forming a splendid green solution. The mixture is then heated till the whole of the chlorate of potash is decomposed, and the mass when cold is boiled with a small quantity of water, whereupon the green color of the solution changes to red ; finally, the liquid is decanted from the peroxide of manganese while still hot, and set aside to crystallize by cooling. It crystallizes in all proportions



with perchlorate of potash, with which it is isomorphous, the latter salt crysallizes in splendid red crystals, when a small quantity of permanganate of potash is added to its solution. With equal parts of the two salts, the crystals are nearly black.

Gregory's (*J. Pharm.* xxi., 312; also *Ann. Pharm.*, xv., 237) consists in adding to a finely divided mixture of eight parts of peroxide of manganese and seven parts of chlorate of potash, a solution of ten parts of hydrate of potash in a very small quantity of water, evaporating to dryness; igniting the finely-pounded mass in a platinum crucible over a spirit-lamp till the whole of the chlorate of potash is decomposed (for which a low red heat is sufficient,) and proceeding as described above. It is readily decomposed by organic matter, so that if it is required to filter the solution previous to crystallization, the neck of the funnel should be filled with asbestos.

The composition of permanganate of potash, according to Mitscherlich, is

	By calculation.		By experiment.	
K O . . . . .	47.2 . . . . .	29.65 . . . . .	30.385	
Mn <sub>2</sub> O <sub>7</sub> . . . . .	112.0 . . . . .	70.35 . . . . .	69.580	
<hr/>				
KO Mn <sub>2</sub> O <sub>7</sub>	159.2	100.00	99.065	

The crystals are soluble in sixteen parts of water at 60°.

The dose generally found to agree best with the stomach is about three grains given in three or four tablespoonsful of water three times a day, a little before meals; much larger doses (as much as ten or twelve grains,) however, have been given, but the dose should be gradually increased.—*Pharm. Jour.*, July 1, 1853.

## RESEARCHES UPON THE STRUCTURE OF GALLS.

By M. DE LACAZE DUTHIERS.

The author commences by stating, that former writers upon the vegetable pathological productions, named galls, have only considered their forms, the plant upon which they are found, and the insects which cause them. Their structure and development have been completely neglected.

Galls are generally considered as purely cellular masses. This is an error, for they contain the principal elements and tissues which

enter into the composition of plants. They may be divided into external and internal galls, from their relations to the vegetable which bears them. The first project outwards, and are only connected with the plant by a very small peduncle; the second kind are developed within the tissues and organs they deform.

External galls are sufficiently naturally divided into unilocular and multilocular, from the number of cells which they contain.

The unilocular class may be divided into five groups, whose structure is more and more simple as it recedes from the first type. This type is represented by the large gall of commerce and the French gall. If taken when fully developed, they exhibit from the surface to the centre,

1. Epidermis without stomata.
2. Cellular sub-epidermal layer, analogous to the cellular tissue of vegetables, containing coloring matter.
3. Zone of irregular ramose cells, with large cavities: the spongy layer.
4. Layer of hard, prismatic, dotted cells.
5. Layer of very thick, polyhedral cells, very hard, much dotted, and forming the protecting layer to the nucleus.
6. Central alimentary mass of soft cells filled with liquid, the external part containing starch-granules colorable by iodine, the internal not producing this reaction.

The central amylaceous mass disappears gradually during the developement of the larva, which does not commence its metamorphoses until it has consumed all the alimentary portion. May the most internal portion be regarded as fecula, modified by a process analogous to the commencement of digestion; or rather as matter more specially azotized, serving for the first phases of embryotic development? The French gall, like that of commerce, contains fibro-vascular bundles, which pass from the point of insertion towards the centre, and ramify in the interior of the parenchyma. We find in these bundles fibres, branching and dotted vessels, and true spiral vessels. These disappear successively and give the five groups of external unilocular galls before mentioned.

1. Hard and spongy. (French gall and gall of commerce.)
2. Hard. (Spherical galls on oak-leaves.)
3. Spongy. (Cellular oak-galls with regular tubercles.)
4. Cellular. (Lenticular galls on oak-leaves.)

5. Protecting layer disappears, the sub-epidermal cellular tissue only remains. (Spherical galls on briar.)

Compound or multilocular external galls are due—

1. To cohesion of simple tumors, allied to the fifth group described above. (Briar-gall.)

2. To the development of a hollowed cellular mass. They may be compared with different groups of the unilocular, being sometimes hard (tumors on roots of oak) or spongy (oak-apples.)

In all the external galls, whether simple or compound, the fibro-vascular bundles are placed on the outside of the protecting layer.

Internal galls are true or false.

True galls contain the insect in the interior of their tissues. They are hypertrophies, and have their seat upon all parts of the plant—on the parenchyma, the nerves, the petioles, the cellular tissues, cortical fibres, medullary rays, and the pith.

False galls are hypertrophies, deforming the organs and affording the insects protection and nourishment; but the parasites are always on the outside of the tissues of the plant. To this division belong the egg-masses of aphides, found on the leaves of the poplar, lime, elm, &c., and the nodosities of the trunk of the apple-tree.

The vegetable hypertrophy, in whatever form of gall it develops itself, does not cause the disappearance of any of the organic elements; it increases their number and volume, and modifies their form.

The cause of external galls is the deposit of a liquid venom with specific properties, a true morbid poison, secreted by the insect, which deposits it in the plant with its eggs. The form, consistence, &c., of the tumors, vary with the specific properties of the virus of which they are the consequences. Internal galls, and more especially the false, appear to owe their formation, as Reaumur has shown, to the abstraction of the liquids of the plant, by the suction of the aphides. This abstraction, in augmenting the vitality of the part, determines also its hypertrophied growth.

We could make a third general division, presenting at the same time the characters of external and internal productions; e. g. artichoke galls.—*Transactions of Phytological Club, in Pharm. Jour.*, July 1, 1853.



## OBSERVATIONS ON QUINIDINE.

BY GUIZOURT AND BUSSY.

From the experiments of these two chemists, it would appear that quinine and quinidine, whatever may be their atomic composition, and which is by no means definitely fixed, are two distinct alkaloids, and possessed of different chemical and physical properties.

1st. Quinine separates from its hydro-alcoholic solution in the form of a liquid of a syrupy appearance, which preserves its transparency on drying in the air. However, when it is spread in a very thin layer on glass, it becomes opaque, taking a very fine and indeterminate crystalline structure. In the first state, the quinine appears to contain 3 equivalents of water, or 14.29 per cent.; in the second state, it contains only 1 equivalent, or 5.26 per cent., the equivalent of quinine being equal to  $C_{20} H_{12} N O_2$ .

Quinidine separates from its hydro-alcoholic solutions in the form of crystals, which belong, according to the authors, to the system of the rectangular or rhomboidal prism. These crystals appear to be anhydrous, for they do not sensibly lose weight at a temperature of  $212^{\circ}$  Fahr.

2nd. Quinine is soluble in every proportion in cold ether and absolute alcohol, and almost in every proportion in alcohol of  $90^{\circ}$ . Quinidine requires 140 to 150 parts of cold ether, 45 parts of absolute alcohol, and 105 parts of alcohol of  $90^{\circ}$  to dissolve it; it is soluble in 3.7 parts of boiling absolute alcohol.

3rd. Crystallized sulphate of quinine (bi-basic, according to Leibig; neutral, according to Regnault,) is soluble in 57 parts of cold absolute alcohol, and in 63 parts of alcohol of  $90^{\circ}$ .

The corresponding sulphate of quinidine is soluble in 30 to 32 parts of absolute alcohol, and in 7 parts of alcohol of  $90^{\circ}$ .

4th. Sulphate of quinine is soluble in 265 parts of cold, and in 24 parts of boiling water.

According to Mr. Howard, the sulphate of quinidine is soluble in 73 parts of cold, and in 4.20 of boiling water. According to M. Leers, this salt is soluble only in 130 parts of cold, and in 16 parts of boiling water. (These great differences may be accounted for by the different mode of operating. Mr. Howard, for example, judges of its solubility in cold water, by the quantity of the salt

which remained from the cooling of a boiling solution. M. Leers probably treated the sulphate directly with cold water.)

5th. The oxalate of quinine is completely insoluble in water.

The oxalate of quinidine is very soluble, and crystallizes readily by the cooling or the evaporation of the liquor. Want of material prevented the further investigation of this substance.—*Annals of Pharm. from Journ. de Pharmacie.*

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### SINGULAR CHANGE IN THE SYRUP OF PROTONITRATE OF IRON.

BY W. TOZIER.

About twelve months since, I prepared a pint of this syrup according to the formula of Mr. Procter, in the "American Journal of Pharmacy," which possessed the different qualities he there describes of its excellence. Not being in immediate use, it was laid aside in a cold situation for some time, during which it still retained its transparency, and showed no disposition whatever to change, at least so far as the iron salt was concerned. About two months since, my attention being directed to it, I was surprised to find deposited on the bottom of the bottle, a considerable deposit of white granular masses, which I at once determined to be grape sugar, and these I observed to continue increasing daily up to the present time, until the entire contents of the bottle became one concrete mass, in quantity much exceeding the original amount of sugar employed. In dissolving some of this granular mass in distilled water, and precipitating the iron by means of sesquicarbonate of ammonia, I was enabled by Dr. Donaldson's test, as well as Moore's potash test, to determine the correctness of my opinion in the first instance. This alteration, no doubt, occurred from the fact of the solution of protonitrate of iron being slightly acid, in the first instance, which appeared to be unavoidable during the process, and which, after some lapse of time, led to the same molecular conversion of cane sugar into grape sugar, that sulphuric acid, as well as organic acids, are known to do.—*Annals of Pharmacy, April, 1853.*

## Varities.

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*Notes on the Almaden Mine, California*, in a letter from T. S. Hart, dated San José, Nov. 26th, 1852.—We left San José at 8 o'clock in the morning in a stage which plies daily, and after a ride of an hour and a half over a most excellent road and through as beautiful and fertile a valley as the eye ever beheld, we arrived at the beautiful village of Almaden, distant twelve miles from San José. It is situated on the bank of a small stream of the purest water I have seen in California.

There is an excellent soda spring in the midst of the village, the water of which is considered as good as the Congress or Saratoga water. There is a large bakery near it, and they use the water in mixing up their bread, and certainly make as fine bread as I have ever eaten.

The works are much more extensive than I expected to find them. We called upon the superintendent, Mr. John Young, who treated us very courteously. The buildings are nearly all new, the old ones having been mostly removed. The loads of ore are brought down by the road to a level with the top of the furnace where it is separated into coarser and finer pieces. The process of extracting the metal from the ore is very simple. The ore is placed in the furnaces, where a gentle and regular heat is applied. As it diffuses itself through the ore the quicksilver contained in it sublimes, and is afterwards condensed and falls by its own weight, trickles down and out at little pipes leading from the bottom of the chambers of the furnace, and empties into vessels so situated as to receive it. From these pipes we saw the quicksilver falling more or less rapidly in large drops. In one vessel there must have been from 15 to 20 gallons of quicksilver. Mr. Young informs me that they manufacture about 1000 flasks per month, each flask containing 75 pounds, making 75,000 pounds per month. The flasks are all of wrought iron. The time occupied in filling the furnace and extracting all the metal from a furnace full of ore is about one week. When this is accomplished, the furnace is opened that the mass of rock may be removed to make way for another batch of ore. When these ovens are first broken open they have to be very careful not to approach them too soon, as the air is charged with the quicksilver escaping in the form of vapor, and if a person breathes it he is sure to be salivated.

After examining the works and the different processes, we visited the mines, which are one and a fourth miles from the works. We procured an order from the superintendent for that purpose, as no person would be admitted without one. We started up a beautiful road cut in the side of the mountain, the road being about 25 feet wide, and rising on an angle of about 20 (?) degrees. About half way up we came to a locality of sulphate of lime, from which some fine specimens have been taken. (I also found some specimens of fluor spar and chalcedony near the soda spring.) After



a fatiguing journey we reached the entrance to the mine, and handing our order for admission to the manager, who appeared to be a very gentlemanly man, we were furnished with a guide. We entered a car which was pushed by our guide into the tunnel, which is a most substantial and masterly piece of workmanship, being arched over in a most thorough manner; it is about 900 feet in length, 10 feet wide, and 10 feet high, with a railroad extending the entire length. The tunnel is some 300 feet below the former outlet near the top of the mountain. We were now each furnished with a torch with which each must enlighten his own way. We were now in the bowels of the mountain, with 350 feet of earth over our heads. The mouth of the tunnel did not appear as large as a man's head.

We soon commenced our exploration from chamber to chamber, which appeared to extend in a most intricate manner in almost every direction. Sometimes we descended a pole almost perpendicular for fifty feet, with merely little notches cut for the toes, and at other times ascended them. We finally came where the miners were at work; we heard the ringing of the drills and the strokes of the hammer, and on approaching nearer we could hear the measured groan or grunt with which they accompany each stroke that they make, and when I was convinced that it did not indicate pain, as its doleful sound led me to think, it became so ludicrous that I burst out into a hearty laugh. The miners are all Mexicans, and have been brought up to it from their infancy. Here was the richest *lead* they had in the mine; I obtained a number of specimens from it. They estimate that the chambers or avenues in a continuous line would extend a mile and a quarter; several have been abandoned on account of the danger of working in them.

We finally ascended to the upper outlet, or that which was first executed by the Indians, who must have begun at a very early date, as they had penetrated the mountain more than sixty feet, which must have been a most arduous task with the rude stone implements they worked with. They sought the vermillion to paint themselves with. They must at times have met with terrible catastrophes; one chamber was pointed out which contained a large amount of human bones buried beneath the rock which had evidently caved in upon them where they had made their excavations too wide. Having got out into daylight once more, we found ourselves near the top of the mountain, the view from which repaid us richly for our laborious ascent. There was spread out before us a vast extent of country, including the whole range of the valley of San José, and the bay with the land bordering it on either side, as far up as San Francisco on the west, and a point opposite to it on the east. Twelve miles from us on the plain was the town of San José, a little to the left the town of Santa Clara, and still further on the village of Alviso, and the Mission of San José on the table land in the distance. This country is so rich and fertile that when its agricultural merits are fully developed and brought to bear, it will feed and maintain all the population of California.—*Silliman's Journal*, July, 1853.

*On the Growth of Plants in Closely Glazed Cases.* By N. B. WARD, F. R. S., &c. Second edition. London: Van Voorst, 1852. pp. 143, 12mo. —The first edition of this little treatise, published in 1842, is doubtless well known to many of our readers; and some may remember Mr. Ward's original account of his interesting discovery of a method of growing every sort of plant in the dun atmosphere of the smokiest part of London, published in the Companion to the Botanical Magazine in 1836. This new edition if reduced in size is increased in interest, and is embellished with tasteful illustrations on wood, several of them exhibiting approved forms of those glazed cases with which the name of our author is inseparably connected. The first chapter, on the natural conditions of plants, their relations to heat, light and moisture, and the necessity of attending to the particular conditions or combination of circumstances, under which each species flourishes, is illustrated by ingenious and often novel observations. The second chapter treats of the causes which interfere with the natural conditions of plants in large towns, and gives some idea of the obstacles which prevent the cultivation of even ordinary plants in the open air in London, and to some extent in other large British towns. The third, on the imitation of the natural conditions of plants in closely glazed cases, tells us how a simple incident (the accidental growth of a seedling fern and a grass in a glass bottle, in which the chrysalis of a Sphinx had been buried in some moist mould), carefully and wisely reflected on, taught Mr. Ward how to overcome these obstacles, and thus to surround himself with his favorite plants, in beautiful vegetation, while living in one of the murkiest parts of London, and even to grow with complete success such ferns as the *Trichomanes radicans*, which is utterly uncultivable in any other way. A fourth chapter treats of the conveyance of living plants on shipboard; which brings to view one of the most important practical applications of Mr. Ward's discovery.

Sir William Hooker states that "the *Wardian cases* have been the means, in the last fifteen years, of introducing more new and valuable plants to our gardens than were imported during the preceding century; and in the character of domestic green-houses—that is, as a means of cultivating plants with success in our parlors, our halls and our drawing-rooms, they have constituted a new era in horticulture." Formerly only one plant in a thousand survived the voyage from China to England. Recently, availing himself of our author's discovery, Mr. Fortune planted 250 species of plants in these cases in China, and landed 215 of them in England alive and healthful! The same person lately conveyed in this way 20,000 growing tea-plants, in safety and high health, from Shanghae to the Himalayas. In fact this mode of conveyance is now so universally adopted, and has proved so successful, whenever properly managed, that it is no exaggeration to say that, probably, "there is not a single portion of the civilized world which has not been more or less benefitted by the invention." An indispensable requisite to success in the transmission of living plants by this method is, that the glazed cases should be freely exposed to light. Where this cannot be done, we must be

content with the former method, of conveying plants in a passive condition, closely packed in peat-moss,—a plan, however, which is only partially successful in protracted voyages. Two additional and highly interesting chapters treat of the application of the “closed” plan in improving the condition of the poor; and on its probable future applications in comparative researches in vegetable physiology, and even in the treatment of diseases. To these, as to the other topics of this work, no justice can be rendered to our author’s suggestions except by lengthened quotations, which the nature of this notice does not admit of. It must suffice to direct attention to this fascinating little volume. Those who read it and who have a true fondness for growing plants, will scarcely be contented without a Ward case, of more or less pretension, which they will find an unfailing source of interest, especially during the long and total suspension of vegetation in our protracted winters. With proper management, and with the requisite amount of light, any plant may thus be cultivated. But we particularly recommend Ferns and *Lycopodia*, of the most delicate kinds, as requiring least care, and as making the prettiest appearance at all seasons. Most of these require little light; although our clear skies afford us this in abundance. So little bituminous coal is consumed, even in our largest cities, that the “fuliginous matter” with which all British towns are begrimed and rendered noxious to vegetation, here interposes no obstacle to rearing plants. Quite unlike England, the principle obstacle to the growth of delicate plants in our houses in winter, and in our grounds in summer, comes from the dryness of the air. For this, the Ward case affords a perfect remedy; as nothing is easier than to furnish a saturated atmosphere for those plants that require it, or to supply and retain the degree of moisture which suits any particular species.—A. G.—*Silliman’s Journal*, July, 1853.

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*Method of obtaining positive Photographic Impressions directly upon Plates of any description, especially on those intended for Engraving.* By A. MARTIN.—The method employed by the author is the same as that which he described for taking positive pictures on glass. The metallic plate, covered in the usual manner (but upon both sides) with etching-ground, is first coated with iodized collodion, then dipped in the solution of nitrate of silver, &c. The picture, when taken, is freed from the unmodified iodide of silver by the bath of cyanide of silver, washed with water, immersed in a solution of dextrine, and dried. The engraver may then make the same use of the design that he does of the outline, which is usually transferred to the etching-ground. A second impression on glass will preserve the design, which the operation of engraving will destroy upon the plate.

Impressions taken in this way upon varnished metallic plates of any kind, or even upon cardboard, unite with the qualities of positive impressions upon glass, a strength and facility of transport of which the latter are deficient. The method is also applicable to wood blocks.—*Chemical Gazette*, from *Comptes Rendus*, April 18, 1853.



*Analysis of Opium.*—Professor Sacc, with a view of preventing the increasing adulteration of opium, proposes the following method of analysis: The opium is to be cut in thin slices and digested with ten times its weight of water, and then filtered through muslin. The solution is to be exactly neutralized with ammonia; precipitated by chloride of calcium and the meconate of lime separated by filtration. The filtered liquor has an excess of ammonia added, is boiled and again filtered; the residue on the filter is impure morphia, and readily indicates the value of the opium. The mother liquor is treated with carbonate of ammonia, to separate the lime, boiled, filtered, evaporated to a syrupy consistence and digested with absolute alcohol, which dissolves the narceia and any meconia, leaving an insoluble residue of gum and caoutchouc. That portion of the opium insoluble in the water, on boiling with absolute alcohol, gives up its narcotine.—*Bull. de la Soc. des Scien. Nat. de Neufchatel*, V. 2me.

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*Extracted Cantharides.*—M. Wald, in speaking of cantharidal collodion, mentions, that in consequence of frequent complaints of the inefficacy of this vesicant, he has ascertained by examination that packages of cantharides from Italy and Hungary contain insects, most of which had been used in the preparation of cantharidin, this having been extracted by ether. The fraud is not readily detected, as the cantharides acted on cannot be distinguished from the others with which they are mixed.—*Idem*.

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*Method of detecting Alcohol in Ethereal Oils.* By A. OBERDORFFER.—From two to four drachms of the oil to be examined are poured into a flat glass plate, in the middle of which is placed a small glass stand (the inverted neck of a six-ounce bottle is very suitable for this purpose) on which a watch glass, with five to ten grains of platinum black, is supported, and the whole covered with a glass bell open at the top. After a strip of moistened litmus paper has been laid over the vessel, containing the platinum black, the operator observes the reaction.

In the course of a few minutes, oil, containing alcohol, begins to redden the litmus paper, which, in the space of a quarter or half an hour, is completely accomplished; upon which, the eliminated vapor of acetic acid is deposited on the interior of the glass bell if the alcohol was present in sufficient quantity, and can be recognized distinctly by its odor. To remove all doubt, the author washes the platinum black, after an hour has elapsed, with a little water, filters, saturates the filtrate carefully with potash, and adds neutral chloride of iron, by which the characteristic color of acetate of iron is obtained; and, after boiling, the fluid becomes decolorized, and the hydrate oxide of iron is precipitated.

From a series of experiments, the author concludes that it is possible, in this way, to detect the presence of 1 to 2 per cent. of alcohol, and that with 5 per cent. the odor is sufficient, with most oils, to prove the admixture of alcohol. How far this method may be interfered with, by some oils which

have very acid reactions, or particularly pungent odors, experience must teach; but with a great number of oils, it has been found available, even with oil of bitter almonds.—*London Ann. of Pharm.*, from *Archives der Pharm.*

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*The presence of Hydro-Sulphocyanic Acid in Commercial Ammonia.*—Mazade has found hydro-sulphocyanate of ammonia in the ammonia obtained from the gas works at Saint Etienne. The red color which arises from the combination of this ammonia with acids proceeds from the action of the hydro-sulphocyanic acid on the iron contained in the acids and in the ammonia. Pelouze has recorded that Moreau detected hydro-sulphocyanate of ammonia amongst the products of the distillation of coal, and that the red color which alum, prepared with sulphate of ammonia from gas works, exhibits, results from this salt.—*London Annals of Pharm.*, from *Comptes Rendus*.

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*A Delicate Test for Iodine.* By Dr. A. OVERBECK.—Comparative experiments have convinced me that the following method for detecting iodine is the most delicate of any yet known:

Some starch or sugar is poured into a test tube with concentrated nitric acid, and heated over a spirit lamp very gently until a violent evolution of gas ensues. The spirit lamp is then removed, and the gas, which now evolves without a continuation of the application of heat, is conducted into the fluid to be tested, to which a solution of starch has been added. If the fluid contains only a millionth of iodide of potassium, a blue coloration directly results. By a farther introduction of the gas, the iodide of starch precipitates out in flocks, and deposits itself, when at rest, as a compact massy precipitate. In this way I have found iodine in many plants, particularly in the ashes of several ranunculuses.—*London Annals of Pharm.*, from *Archives der Pharmacie*.

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*Purification of Tallow and Grease.*—MR. WIGGIN, of Ipswich, explained to the meeting a process which he has recently patented, for melting and purifying tallow and other kinds of grease. The process consisted in heating the fatty substance in the state in which it is removed from the animal, with a small quantity of sulphuric acid of sp. gr. 1.3 to 1.45. The acid dissolves the membrane and other impurities present, acquiring a dark color and thick syrupy consistence, while the fat separates in a state of great purity. Some samples, which were shown to the meeting, of tallow and also of lard which had been prepared by this process, were whiter and more free from flavor than those prepared in the usual way.

In the discussion which ensued, it was suggested that the fats obtained by this process were probably the fatty acids resulting from the decomposition of the neutral fats by the oil of vitriol; but Mr. Wiggin stated, that in using the sulphuric acid at the density indicated no decomposition of the fats was effected, and that no sulphurous acid was evolved in the process.—*Pharm. Journ.*, May 1, 1853.

*Hydrate of Magnesia as an Antidote in Poisoning.*—Schuchardt represents as the result of his experiments, that hydrate of magnesia is a certain antidote, not only for arsenious acid, either in solution or substance, but also for corrosive sublimate, for the salts of copper, and even, although the experiments in this respect are not so satisfactory, for the alkaloids, such as morphia and brucia. The hydrate of magnesia may be prepared by mixing slightly calcined magnesia with water. In poisoning with arsenious acid the quantity of magnesia given as an antidote should exceed eight times the weight of the poison. For corrosive sublimate the antidote need not exceed five times the weight of the poison.—*Pharmaceutical Journal*, from *Journal de Pharmacie d'Anvers*.

*Poisoning by Strychnia.*—The following case, which recently occurred in the neighborhood of London, shows the importance of caution in the mode of ordering strong medicines in prescriptions, and also the necessity of attention to the dose in dispensing. It is not necessary to mention the names of the parties concerned. The prescription was as follows:

℞ Strychnos  
Nucis Vomici, ℥ij.  
Bismuth Trisnit., ʒiss.  
M. ft. pulv. xxiv.

The prescription was prepared twice or three times at different shops correctly, and produced no bad effect; but on one occasion the young man put in strychnia and nux vomica, of each ℥ij. The patient took one dose, and very soon afterwards complained of some extraordinary sensations, and almost immediately expired. The accident arose from the fact that the word *strychnos* being written on a separate line, was considered by the dispenser to be another ingredient, instead of being as it was, the generic title of nux vomica. This would not have misled a young man qualified for his business, who considered for a moment the strength of the dose he was administering; but all young men not being so qualified and considerate, care should be taken in writing prescriptions to avoid any possible ambiguity.—*Pharmaceutical Journal*, July, 1853.

*On the Purification of Sulphuric Acid from Nitric Acid.* By M. PELOUZE.—The fact that ammonia is capable, in virtue of the hydrogen which it contains, of decomposing the nitric acid and nitrous oxide present in sulphuric acid, may be taken advantage of for purifying sulphuric acid. These substances frequently present in sulphuric acid, are very detrimental in some cases—for example, in dyeing. By the use of a half per cent. of sulphate of ammonia, the most impure acid may be rendered perfectly free from these substances, and in the generality of instances, from one to two thousandths is quite sufficient. The salt should be introduced into the lead pans in which the sulphuric acid is concentrated.

It is the opinion of some that the injury suffered in the platinum vessels



used for the concentration, is owing to the presence of nitrogen compounds; and besides this, it appears that sulphuric acid containing nitric acid, is less suited to the purification of oils than pure acid.—*Pharmaceutical Journal*, from *Ann. de Chim. et de Phy.*, 3 ser. vol. 2, p. 47.

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*Crayons for Writing on Glass.* By R. BRUNNQUELL.—The author prepares crayons for writing on glass, so as to enable the contents of glass vessels to be described immediately upon them in the following manner: Four parts of spermaceti (or stearine), three parts of tallow, and two parts of wax are fused in a cup; six parts of minium and one part of potash are then stirred into it, the mass kept warm for half an hour, and then poured into glass tubes the thickness of a lead pencil. After rapid cooling, the mass may be screwed up and down in the tube, and cut to the finest point with a knife. A crayon is thus obtained which will readily write upon clean dry glass.—*Pharm. Journal*, from *Dingler's Polytech. Journal*, and *Chemical Gazette*.

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*Adulteration of Cassia Oil with Oil of Cloves.* By G. L. ULEX.—This adulteration is as frequent as it is profitable. The specific gravity affords no indication of the purity of the oil, but there are other means of distinguishing between cassia and clove oil. When a drop of true cassia oil is heated on a watch-glass, it evolves a fragrant vapor, possessing but little acidity; when, however, clove oil is present, the vapor is very acrid and excites coughing.

Cassia oil, when treated with fuming nitric acid, does not present any intumescence, but crystallizes; when clove oil is present, it swells up, evolves a large quantity of red vapor, and yields a thick reddish-brown oil.

Cassia oil, treated with concentrated caustic potash, solidifies when pure, but not when mixed with clove oil.

One or two drops of true cassia oil dissolved in alcohol, give a pure brown color on the addition of protochloride of iron.

Fresh clove oil, treated in the same way, assumes an indigo blue color; older oil becomes green. Both colors are so intense that a twenty or thirty-fold volume of alcohol must be added before the liquid admits of the passage of light. In this reaction the protochloride of iron is reduced, and the clove oil is converted into a black resin, which separates.

Mixtures of cassia and clove oils treated with protochloride of iron, give an indefinite color between brown and green.—*Pharm. Journ.* from *Archiv der Pharmacie*, Jan. 7, 1853.

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*Test for the Purity of Ultramarine.*—Dr. Bernheim proposes the following test for the examination of commercial ultramarine: Two ounces of sulphuric acid are diluted with twenty ounces of water; the samples of ultramarine introduced into separate test tubes in quantities of fifty or one hundred grains, and the acid added until the blue color is converted into a

reddish one. The quantity of acid used indicates the relative value of the ultramarine as a color. When smalt is present the color is not entirely destroyed, and chalk is recognizable by the effervescence.—*Pharm. Journal*, from *Kunth und Gewebeblatt für Bayern*, 1853.

*Red Ink.*—C. Weber states that a very good red ink may be made in the following manner: Four ounces of Pernambuco wood are boiled with sixteen ounces of dilute acetic acid, and an equal quantity of water, until twenty-four ounces remain. An ounce of alum is then added, and the liquid evaporated to sixteen ounces, an ounce of gum arabic dissolved in it, the whole strained, and a drachm of protochloride of tin added to the cold liquid.

This ink possesses a very beautiful color, which is preferable to that of cochineal ink, from the fact that it is free from the blue tint of the latter, and further because it is more permanent.—*Pharm. Journal*, from *Allgemeine Pharmaceutische Zeitschrift*.

*Tannate of Quinine.*—The distinguished German pharmacologist, Buchner, long entertained the opinion that this preparation deserved the good opinion both of physicians and of pharmacutists. He recommended the direct employment of the cinchona bark as the readiest means of procuring the tannate of quinine. His mode of preparing it was the following, and is, in fact, an extremely simple one: Cinchona bark, roughly powdered, is to be treated with six times its weight of common or household vinegar. After it has macerated during twenty-four hours, it is boiled, then decanted and the residue is treated afresh with more vinegar. These several decoctions are to be mixed together, and filtered when perfectly cold, and to them is to be added an infusion of gall-nuts so long as a precipitate is formed. This precipitate is to be collected on a filter, to be then washed, and lastly, to be carefully dried. Although the tannate of quinine prepared in this manner is not absolutely pure, and therefore requires to be given in larger doses than the sulphate of quinine, yet Buchner considered this preparation as particularly to be recommended, both on account of its cheapness in comparison with the more expensive drug, sulphate of quinine, and also from the simplicity of its manufacture, on account of the facility with which it may be prepared in almost all pharmaceutical establishments.—*Annals of Pharmacy*, June, 1853.

*Means of preserving Paper Labels.* By G. L. ULEX.—The labels upon vessels kept in damp cellars soon become obliterated in consequence of the paste becoming mouldy and the growth of a fungoid vegetation, which is at first sporadic, but gradually covers the entire label. If, however, a trace of the oxide of mercury is mixed with the paste, and the labels themselves are dipped into a very weak alcoholic solution of bichloride of mercury, their destruction in this way is completely prevented.—*Pharm. Journal*, from *Archiv der Pharmacie*, Jan. 1853.

*On the Composition of Yeast Powder.* By EDWARD N. KENT.—The following analysis was instituted for the purpose of ascertaining the composition of the yeast-powders which are now extensively sold by grocers.

Mixed with water, effervescence is produced by liberation of *carbonic acid*. A portion remains undissolved by *cold* water, which, when heated, forms a clear gelatinous mass, which becomes blue with the iodine test, *starch*. The portion soluble in cold water gives precipitates with salts of lime, characteristic of *tartaric acid*; and with chloride of platina gives *potash*. A portion of the original powder heated to redness, and treated with burning alcohol, gives yellow and violet flame, including *soda* and *potash*.

A quantitative analysis of the yeast powder gave the following results:

A portion treated with water, and the gas dried by chloride of calcium, gave .085 carbonic acid.

A separate portion ignited, the residue treated with hydrochloric acid, and the alkaline chlorides thus formed separated by the double chloride of platina and sodium, gave .137 potash, and .096 soda.

Another portion treated with *cold* water gave .227 starch.

The tartaric acid and water estimated as loss gave .455. By calculation as cream of tartar, this leaves .045 water in combination with the soda.

The carbonic acid formed, is in larger proportion to the soda than exists in the neutral carbonate, and in less proportion than exists in the bicarbonate, from which I infer that an intermediate carbonate, which is sold under the name of *soda-salærat*, is used for the preparation of yeast-powder.

The per centage composition of the powder is:

Carbonic acid . . . . .	.085	} = 22.6, Soda-salærat.
Soda . . . . .	.096	
Water . . . . .	.045	
Potash . . . . .	.137	} = 54.7 cream of tartar.
Tartaric acid and water . .	.410	
Starch . . . . .	.227	22.7 starch.
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	1.000	100.

SYNTHESIS.—Crystallized bitartrate of potash, powdered and sifted, is better than the same article which is sold in an impalpable powder, as cream of tartar, the latter being too fine, and consequently the gas is liberated too rapidly when mixed with water. Corn starch is more palatable than that from wheat, and consequently is the best. These articles mixed with *soda-salærat*, in the above proportions, gives yeast powder identical with the one analyzed.—*New York Journ. Pharm.*, June, 1853.

*An Account of a Deep-sea Sounding in 7706 fathoms, in 36° 49' South Latitude, and 37° 6' West Longitude.* By Captain HENRY MANGLES DENHAM, R. N., F. R. S.—This sounding was obtained on a calm day, October 30, 1852, in the course of the passage of H. M. ship *Herald*, from Rio de Janeiro to the Cape of Good Hope. The sounding-line was 1-10th of an



inch in diameter, laid into one length, and weighing, when dry, 1 lb. for every hundred fathoms. Captain Denham received from Commodore McKeever, of the United States Navy, commanding the *Congress* frigate, a present of 15,000 fathoms of this line, 10,000 on one reel, and 5000 on another; and considers it to have been admirably adapted for the purpose for which it was made, and to which it was applied. The plummet weighed 9 lbs., and was 11·5 inches in length, and 1·7 inch in diameter. When 7706 fathoms had run off the reel, the sea-bottom was reached. Captain Denham states that Lieut. Hutcheson and himself, in separate boats, with their own hands, drew the plummet up 50 fathoms several times, and after it had renewed its descent, it stopped, on each occasion, abruptly, at the original mark to a fathom, and would not take another turn off the reel. The velocity with which the line ran out was as follows:

				h.	m.	s.
The first 1000 fathoms in	.	.	.	0	27	15
1000 to 2000 fathoms in	.	.	.	0	39	40
2000 to 3000 fathoms in	.	.	.	0	48	10
3000 to 4000 fathoms in	.	.	.	1	13	39
4000 to 5000 fathoms in	.	.	.	1	27	06
5000 to 6000 fathoms in	.	.	.	1	45	25
6000 to 7000 fathoms in	.	.	.	1	49	15
7000 to 7706 fathoms in	.	.	.	1	14	15
				9	34	45

The whole time, therefore, taken by the plummet, in descending through 7706 fathoms, or nearly 7·7 geographical miles of 60 to the degree, was 9h. 34m. 45s. The highest summits of the Himalaya, Dhawalagiri, and Kinchinginga, are little more than 28,000 feet, or 4·7 geographical miles, above the sea. The sea-bottom has, therefore, depths greatly exceeding the elevation of the highest pinnacle above its surface.

The strength of the line, tried before the sounding, was found to be equal to bear 72 lbs. in air. The 7706 fathoms which ran out, weighed, when dry, 77 lbs., exclusive of the plummet, 9 lbs. Great care was taken in the endeavor to bring the plummet again to the surface, to show the nature of the bottom, but, whilst carefully reeling in, the line broke at 140 fathoms below the water-line, carrying away a Six's thermometer which had been bent on at 3000 fathoms.—*Journ. of Frank. Inst., from London, Edinburgh and Dublin Philosoph. Mag.* March, 1853.

*On the Adulteration of the Citrate of Iron and Quinine of Commerce.* By C. GREVILLE WILLIAMS.—Physicians not yet being agreed as to the identity of action on the system of quinine and its accompanying alkaloids, it is unnecessary to insist on the fact, that until the question has been settled by decisive experiments, practitioners should be aware of the value of the preparations they are administering to their patients.

A quantity of beautifully "sealed" citrate of iron and quinine having been sent to me, with a request for examination, the percentage of quinine

being suspected to be below the proper quantity, it was examined thus:—100 grs. dissolved in the least possible quantity of distilled water, the solution filtered from a small quantity of dirt (!), the filter carefully washed, and the filtrate precipitated by a very small excess of ammonia. The precipitate was washed as much as was safe with water containing a little ammonia; it was then dried on the water-bath at  $212^{\circ}$ . After being exposed to this temperature for some time, it was observed that the precipitate, instead of melting to the paper as quinine does, remained in the form of a powder; it was therefore weighed, and found to be 10.4 grs.; on digestion in the cold with ether, this was reduced to 5.1. The portion dissolved proved on examination to be quinine; and the portion separated by the filter, as was suspected from its infusibility at  $212^{\circ}$ , turned out to be cinchonine.

The scales therefore consisted of—

Citrate of sesquioxide of iron and ammonia . . . . .	89.6
Quinine . . . . .	5.3
Cinchonine . . . . .	5.1

The per-centage of quinine paid for by the pharmacist was 12.5 per cent.—*Chemical Gazette*, July, 1853.

*Photography on Stone.* By MM. BARRESWIL and LEMERCIER.—The process proposed by the authors, consists in preparing a negative on paper, and then producing a positive picture on lithographic stone. The negative is obtained by any method, the most rapid being preferable. The positive is produced by a fatty or resinous coating laid on the stone, and capable of being rendered soluble in some solvent by the action of light (and perhaps of oxygen.) The negative is laid upon the lithographic stone thus prepared, and covered with a glass plate; the whole is then exposed to the sun, the stone washed with the solvent, and then treated by the ordinary processes of lithography. The authors have hitherto employed asphaltum for coating the stone, and sulphuric ether as the solvent. They expect in this manner to reproduce engravings, lithographs, &c.—*Chemical Gazette*, from *Comptes Rendus*, May 16, 1853, p. 878.

*On the Preparation of Lakes by means of Chloride of Antimony.*—Chloride of antimony, which is to be met with in commerce under the name of *Liquor Stibii muriatici*, may, according to a recent observation of Prof. Lampadius, be very well employed in the preparation of several lakes. By dropping it into decoction of Pernambuco-wood, madder, Campeachy-wood, Quercitron-wood, and several other coloring matters, lakes, some of which are very fine, are produced.

From the infusion of cochineal in liquid ammonia, prepared in the cold, when a little pure vinegar is added to it, a large quantity of lake is obtained, which does not yield greatly in beauty to carmine.—*Chemical Gazette*, from *Schweiz. Gewerbeblatt*, vol. xi. p. 127.

*Saccharate of Lime.* By M. TROUSSEAU.—The virtues of this preparation are due to the fact that sugar in solution is capable of absorbing a very large quantity of lime. The compound is made by saturating simple syrup with lime, and then filtering it. A perfectly transparent mixture is thus obtained, which is not troubled by admixture with water, and is characterized by an extremely alkaline taste. This syrup combining with water in any proportion, is a convenient and valuable mode of administering lime. The attention of physicians was first called to the article by Doctor Capitaine, adjunct to the Faculty of Medicine, and it was first employed by myself at the Necker hospital, in the treatment of the chronic diarrhoeas of children. The dose for an infant is from a fourth to half a drachm, and for an adult, from one drachm to two and a half. At the Necker hospital, I was in the habit of mixing a small portion of this preparation with the milk allowed each suckling during the day, and it seemed to me to obviate the tendency of the milk to acidity in the stomach, and to prevent the disposition to diarrhoea so common in children of a certain age at particular seasons. In comparing the effects of the saccharate of lime with those of the bicarbonate of soda, I found the former to possess marked advantages.—*The Virginia Med. and Sur. Jour.* from *Trousseau, Traité de Thérapeutique.*

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*Dose for administration in cases of Poisoning, in which the Nature of the Poison is unknown.*—After freely evacuating the stomach by emetics, the following formula, proposed by a pharmacist of Montpellier, may be prescribed.

℞. Calcined magnesia, )  
 Pulverized charcoal, ) Equal parts in a sufficient quantity of water,  
 Sesqui-oxide of iron, )

This preparation is perfectly innocuous, and is very likely to be efficacious, for its ingredients, though simple, are antidotes to the most active and commonest poisons.—*The Virginia Med. and Sur. Jour.* from *Bulletin de Thérapeutique.*

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*Process for Electro-Plating China Ware.*—A specimen of china, coated with silver, was exhibited. Hitherto the art of electro-plating has been chiefly confined to metallic bodies, owing to their affinity for such deposits. The patent recently taken out by Mr. Ridgway, of the Staffordshire Potteries, extends it to Parian figures, ornamental china and glass, and to every description of Ceramic ware.

The advantages are manifold, when it is considered that this art may be applied to the most beautiful models, so as to retain all their sharpness and effect, without the cost of dies and other heavy charges to which the metallic department is subject, thereby cheapening the article; while, by means of chasing and embossing, richness is given.

The mode of effecting the electro-deposit is as follows:—In the first place, the articles are steeped in strong alcohol, or certain gelatinous solutions,



and when nearly dry immersed in nitrate of silver or otherwise, so as to prepare them for receiving the deposit of copper. This done, they are plunged into cold water, and carefully dried in a suitable kiln, after which they are placed in sawdust for twenty four hours to prevent oxidation.

The next operation is to remove any roughness on the surface which the articles may have contracted. This is done by means of sand paper or silver sand, and brushing with a scratch-brush till they are made perfectly smooth, care being taken to remove any greasy matter from the surface.

The copper and silver have now to form one alloy, so as to unite them firmly together. For this, a film of quicksilver is employed, dissolved in nitric acid. This is set aside to crystallize, and the crystals are dissolved to form the desired solution; the articles are then dipped therein, passed through water, and introduced into the vat containing the silver solution.

The silver solution consists of metallic silver dissolved in nitric acid diluted with water, with the addition of certain cyanides, till a given result is obtained. This is followed by a repetition of the copper process only with the solution, and the articles in due time appear in their silver garb, ready to receive the chasing.

Gold is prepared by being dissolved in nitro-muriatic acid. This chloride is digested with calcined magnesia, and the whole precipitated into an oxide. The oxide, boiled in strong nitric acid, dissolves the magnesia, and when washed forms a cyanide of gold and potassium.

The films of gold are deposited in the vessels by means of voltaic electricity, a process requiring careful observation, both to insure an adequate coating and the proper color; if defective, it will have to be repeated.

The time of exposure to the heat depends upon its intensity, and the color desired to be produced; these must be the fruits of experience, and will not fail to be acquired by practice.

The finishing process is the burnishing, which is the same as with the silver, and requires no further illustration.—*F. Inst. Jour.*, from *Journal of the Society of Arts*.

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*Metallic Cement*.—According to Serbat, a metallic cement, which answers for all purposes and becomes hard in the heat, may be obtained in the following way:—100 parts of oxide of zinc, with the same quantity of sulphate of lead, are triturated with 30 parts of linseed oil, and then a mixture consisting of 100 parts of black oxide of manganese and 100 parts of peroxide of iron added until the mass forms a stiff dough. This is beaten in a mortar for twelve hours, during which the remainder of the above mixture of iron and manganese is added by degrees. The goodness of the cement may be recognized by its not crumbling when rolled out between the fingers.—*Annals of Pharmacy*, July, 1853, from *Le Génie Industriel*.

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*Electro-Telegraphic Development*.—The extent of telegraphic communication completed and in operation throughout the world at the beginning of the present year may be estimated, as far as can be gathered from the returns, at

nearly 40,000 miles. Of this amount there were nearly 4000 miles in Great Britain, of which 100 miles only were underground, with about 400 or 500 miles in course of construction in England, Scotland and Ireland, and as many more projected. In America there were 20,000 miles of telegraph completed and in operation, with 10,000 more in process of construction, uniting in one great network the principal cities of the United States, the Atlantic and Pacific Oceans, and the extreme boundaries of that extensive continent. In Europe there were about 11,000 or 12,000 miles of telegraph in operation, and as many more projected or in progress. In Germany there were 3000 miles completed, in Austria 3000, and in Prussia between 3000 and 4000 miles. France, until lately in the rear of other nations, is now extending her telegraphic lines in all directions, her completed mileage at the present moment being small compared with that of other countries, her principal communications being those between London and Paris, Strasburg, and Marseilles. Russia has just commenced her system of telegraphs between St. Petersburg, Moscow, and Cracow, and the ports on the Baltic and Black Seas. In addition to her existing line between Naples and Gaeta, Italy is continuing the Neapolitan line from Terracina to Rome, so as to connect with the lines of Upper Italy. Denmark has about 400 miles of telegraph. Belgium 500, and the Netherlands line has just been completed from Amsterdam to the Hague. About 4000 miles are about to be constructed in India. Switzerland is introducing the instantaneous communicator, as well as other continental cities, so that the only unsupplied portions that will soon present themselves on a telegraphic map of the world will be Australia, Africa and China.—*Franklin Inst. Journ.*, from *London Mechanics' Magazine*,

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*Fraudulent Substitution of Quinidin for Quinine.*—SIR,—We think that a fraud is perpetrated with sulphate of quinidine, against which we think it right to put the trade on their guard. It has hitherto been sent out in a squat bottle with a red label and a seal, bearing our name and address, but without the name of the article. Certain parties have removed the red label, leaving the seal on, and then sold it as our sulphate of quinine. We beg, therefore, to call attention to the fact that our quinine in vials always bears a white label and a red seal, with *quinina sulphas* engraved in the centre, and that in future our quinidin will bear a red label and a green seal, with "*sulphate of quinidin*" engraved in the centre. Against the fraud of retailing quinidin in small quantities as quinine, we believe there is no better security than testing it in any case of suspicion, with the ether and ammonia test, which has already appeared in your Journal. For this purpose, the following modifications will be found convenient: mix extra light ether and liq. ammon., P. L., of each a drachm, in a vial, and add six grains of the suspected salt, shaking the whole well together. The quinidine, if any be present, will remain undissolved in the form of a powder, more or less crystalline.

We are, Sir, yours very respectfully.

HOWARDS & KENT.

To the Editor of the Pharmaceutical Journal.

Stratford, near London, May 21, 1853.

[*Phar. Jour.* June, 1853.]

*On White or Imperial Rhubarb.* By DR. G. WALPERS.—In all works on Pharmacology there occurs a somewhat vague account of a very superior kind of rhubarb, said to be collected for the sole and particular use of the Imperial Court of St. Petersburg, and distinguished by the name of *White or Imperial Rhubarb* (*Radix Rhei alba seu imperialis*.) It is described as a rhubarb root in which the white portion so far predominates, that only a few red streaks are perceptible upon the surface of a transverse section. No one, however, is from personal knowledge acquainted with this species of rhubarb. In order to put an end to these doubts, I some time since addressed a letter to Mr. Büchner, chief Apothecary to the Imperial Court, begging him for a small specimen of this "*Imperial Rhubarb*" for my pharmacological collection, or should the communication of this precious drug be inadmissible, that I might at least have an authentic description of it. Mr. Büchner replied to this request with the utmost promptitude, informing me that, after having instituted the most careful inquiries, it appeared that no such species of rhubarb had at any time been imported for the Imperial family; that it had never occurred in commerce; and, finally, that in neither any public or private collection in St. Petersburg was there to be found a specimen of this (consequently mythical) root.—*Pharm. Journ.*, from *Bonplandia*, March, 1853.

[It was the Russian traveller Pallas who first drew attention to the so-called *White Rhubarb*. We extract from his works the passage relating to it: "J'ai vu pendant mon séjour à Kiakta des petits morceaux de rhubarbe blancs comme du lait. Elle est douce au goût, et a les mêmes propriétés que celle de la meilleure qualité. L'apothicaire se proposoit de trier tous ces morceaux, et de les envoyer séparément à Pétersbourg pour la pharmacie de la Cour."—*Voyages de M. P. S. Pallas, en différentes Provinces de l'Empire de Russie, et dans l'Asie Septentrionale, traduits de l'Allemand*. Paris, 4to, 1793, tome iv., p. 219.—*Ed. Ph. Journ.*]

*Ointment of Mucuna Pruriens as a counter-irritant.*—M. BLATIN proposes (*Revue Médico-Chirurgicale*, Jan. 1853) the substitution of mucuna pruriens (cowhage) for tartar-emetic or croton-oil, as the active ingredient of ointments intended to act as cutaneous irritants. The proportions are, seven grains and a half of the hairs of cowhage to an ounce of lard. The ointment must be rubbed in from ten to twenty minutes; seven or eight grains are usually sufficient. The immediate effect is the production of a sensation resembling stinging with nettles; but the burning sensation and the itching diminish during the friction, and entirely pass off in less than half an hour. The skin generally becomes covered with white flat papulæ, which soon disappear, leaving a sensation of heat. The effect is due to the mechanical irritation of the hairs. This system of counter-irritation has, we are told, produced no inconvenience; children bear it easily. The indications for its employment are the same as for the use of tartar-emetic or croton-oil ointment.

M. Blatin believes cowhage ointment to be a good medium for the en-



dermic application of various substances, such as hydrochlorate of morphia.  
—*American Journ. Med. Sci. from Assoc. Med. Journ.* April 1, 1853.

*Antiseptic properties of Iodoform; Inhalation of its Vapor in Phthisis.*—Iodoform, according to RIGHINI (*Journ. de Chim. Méd.* Feb. 1853,) is possessed of remarkable antiseptic and antispasmodic properties. He tried it in a silk manufactory, by distributing vessels containing small quantities, either in powder or diffused in water, through different parts of the establishment; and he found it effectual, with the advantage, moreover, of not incommoding the work people. As a hygienic resource in hospitals, he recommends that it be employed in the following manner:—

A soft paste is made, by moderately heating sixteen parts of starch in a sufficient quantity of distilled water, and stirring them with a wooden spatula. Eight parts of iodoform having been added, the mixture will be found to be readily absorbed by filtering-paper. The paper prepared in this way is cut into strips three or four inches wide, and suspended in the wards. The iodoform slowly escapes without causing any inconvenience to the inmates. It is most freely liberated in moist states of the atmosphere. M. Righini recommends iodoform-paper for the purpose of obviating the bad smells and noxious effluvia of slaughter-houses, and also for preserving meat from spoiling.

M. Righini states that the inhalation of iodoform dissolved in ether is of great service in retarding the progress of phthisis.—*Ibid.*

*Bitartrate of Magnesia.*—The *Hanoverian Pharmacopœia* has the following formula for this salt, viz.:

Take of Tartaric acid	-	-	-	125 grammes.
Distilled water	-	-	-	2000 “
Dissolve and add gradually in portions,				
Carbonate of magnesia	-	-	-	157 grammes.
Evaporate and crystallize.				

*Journ. de Chim. Méd.*

*Caffein.*—The *Hanoverian Pharmacopœia* directs caffein to be made by precipitating a decoction of coffee with acetate of lead, filtering and washing the precipitate, evaporate the liquids to dryness and after mixing the powdered extract with sand, the mass is sublimed in a Mohr's apparatus just as in making benzoic acid.—*Journ. de Chem. Méd.*

*Suppository of Belladonna.*—The *Pharmacopœia* of Hanover directs a suppository to be made of

Extract of Belladonna	-	-	-	10 grains.
Acetate of morphia	-	-	-	$\frac{2}{3}$ of a grain.
Butter of cacao	-	-	-	1 $\frac{1}{2}$ drachm.
Mixed and made into three suppositories.				

[*Journ. de Chim. Méd.*

## Editorial Department.

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OUR JOURNAL.—It was intended to leave open a form of this number, until after the meeting of the Association, so as to incorporate a short account of its proceedings, but the idea was abandoned in view of the detention of the Journal beyond the time it is due. This will, however, if possible, be compensated for by forwarding the November number somewhat earlier than usual. We have to apologize for the very long articles on the state of Pharmacy in England and Germany, which, to some, who take the Journal more for its practical items, may not be acceptable, yet in view of the great interest taken at this time, by many others, in the working of pharmaceutical institutions and measures, it has been thought best to publish the whole of the remainder of the interesting article of M. Bussy. The increase of our subscription list since the first of January has been gratifying, and indicates that the change then commenced in the size and appearance of the Journal, has not met with disapprobation. It shall be our endeavor to render the work as practical as possible. Its usefulness might be much increased, and its interest enhanced, if but a tythe of the pharmacutists, who are qualified to make observation, and who are constantly in the way of doing it, would become occasional contributors of letters relative to the state of pharmacy—notice of adulterations—unusual phenomena in compounding prescriptions—incompatible prescriptions—the changes that officinal preparations undergo in warm latitudes—new remedies, etc. It is usual in the “London Pharmaceutical Journal” to devote a page to answering queries from correspondents, who usually adopt a *nom de guerre*—as *Amicus*, *Chemicus* or *Juvenis*—or simply initials. By this means, in a small space, much information interesting to the querists may be given. Now we propose to our readers to commence such an arrangement on the following conditions:—that the correspondent sends his proper name in addition to his anonymous signature, and that he prepays the postage of his note. Inquiries regarding books, preparations, phenomena, apparatus, etc., requiring but short answers, will be appropriate.

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MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—By the time our readers receive this number the Association will have met on the 24th of August to carry out the objects of its institution. It is hoped that the meeting will be large. Various measures, important to the improvement of our art and the advancement of its practitioners as a professional body, will be brought forward, relating to the statistics and general condition of American Pharmacy, to the inspection of drugs, to pharmaceutical organization, to the discouragement of quackery, and to practical and scientific education. There is need of more *esprit du corps*—of a greater willingness to sacrifice personal interest for the benefit of the profession—among the druggists and apothecaries of the United States. Twelve years ago the chemists and druggists of England were in a hopelessly divided state—no organization existed—jealousy

was rife—nothing short of an attack on their rights or privileges as a body of tradesmen could induce any consociation or combined action; and as soon as the danger had passed, they separated, as though no common interest but security could assimilate them. Since the organization of the Pharmaceutical Society a complete change has come over the pharmacy of England and Scotland. The Society extends over the whole island; its members and associates to the number of more than 3000 are found in every city and town of note; local secretaries are dotted over the country and act as so many arms of the Society. The Monthly Journal is taken by every member for a part of his subscription, and hence all are kept apprized of the transactions of the parent society, and the progress of art and science. Branch associations are springing up, and the profession is rapidly attaining that unanimity of action and desire for improvement which always secures success. In this country we want a central power, but not as they have it in England. We want a national association of pharmacutists constituted somewhat like our political union—of delegates from the incorporated colleges and societies, and of representatives from the pharmacutists of places not under organization who shall come with the approval of their brethren, much as in the present constitution of the Association. The few local societies now existing do not form a basis sufficiently broad to support such a structure as is needed. These colleges and societies have their several spheres of action, in which their special usefulness is adapted to the circumstances that surround them. Let them go on increasing in number until every state or chief city is provided;—there cannot be too many. Meanwhile, let the National Association go on gaining strength and influence; its success interests all; all have or may have a part in its councils; and as it has no tendency to cumulation, no field of aggrandizement as a permanent property-holding society, there is no room for jealousy on the part of local corporations, and no grounds for fear of oppression on the part of the general profession. It is of the utmost importance that honesty, candor, and disinterestedness, should be prominent and true features of the present reformatory movement, to convince those who are to be the subject of its measures that the object is a pure one, unaccompanied by hidden motives for personal aggrandizement. Men are ever fallible; the best arranged schemes often fall short of the desired aim. The motives that induce men to engage in reforms are exceedingly various when carefully analyzed; yet, let us, while not expecting too much of human nature, hope that all these things will work together for good; and adopting for our motto the words of the great dramatist,

“Our doubts are traitors,  
And make us lose the good we oft might win,  
By fearing to attempt,”

let us do the best with the power that we have, and under the circumstances that we find ourselves, and success will surely follow.

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CARTHAGENA IPECACUANHA.—Through the kindness of Messrs. Haskell, Merrick & Bull, Druggists, of New York, we have received a fine specimen of so-called “Carthagena Ipecacuanha.” This sample of the drug in its



general aspect belongs to the grey variety; a considerable number of the roots have more or less of the woody stems attached, and many of these stems are loosely admixed with the proper drug. The roots vary in thickness from one to two and a half lines, are more or less contorted, are less annulated and marked with fewer transverse fissures than the Brazilian, while the relation of the cortical to the ligneous portion is about the same. The color of the epidermis is a uniform dull gray; the fracture is smooth and has a resinous lustre and greyish-brown color; its odor is that of the ordinary variety, as also is its taste. From the greater percentage of ligneous stems it must be considered inferior in value to the best Brazilian root, but when properly garbled, we have no doubt that it will prove quite equal in efficacy. As regards its origin, it probably is brought from the interior. Dr. Wood says (U. S. Disp. page 414, 1851,) "We have seen in this market bales of gray ipecacuanha with very imperfectly developed rings, which was said to come from Caraccas. At present, however, this is very rare, if to be found at all."

According to Humboldt, ipecacuanha grows in New Grenada, and it is altogether probable that the variety in question is derived by a trans-montane commerce from the northern slope of the Valley of the Amazon, in the southern portion of New Grenada and northern Brazil drained by the Rio Negro.

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NEW YORK MEDICAL GAZETTE VS. APOTHECARIES.—We extract the following from the July number of the New York Medical Gazette:

"MISTAKES OF APOTHECARIES.—The fatal blunders by apothecaries or their clerks are becoming so numerous, that a due regard to the safety of human life imperatively demands the enactment of some stringent measures by law, for the protection of the public. The College of Pharmacy appears to be powerless, as it certainly is useless, as a remedy of the evil. Unless something is speedily done, it will be the duty of physicians to return to their former practice, now nearly obsolete, of supplying their patients with medicines, instead of allowing them to depend upon the casual apothecaries in the neighborhood, in many of which neither master nor man have any qualification for their business, and are as liable to give morphine instead of quinine, or as in a recent fatal instance, *laudanum for paregoric*! a mistake which admits of no palliation, and should subject the offender to exile from the trade forever.

There are a few educated, discreet, and careful apothecaries in the city, who neither themselves, nor by their clerks, presume to act the doctor, by changing or criticising the prescriptions sent to them, or expressing their sage opinions of the dose. Such and such only should be patronized by the profession or the public. We know of many shops, the impertinence of whose proprietors in this regard, will account for their being shunned by medical men, and avoided by their patients, the only redress which is available. It is full time that physicians and apothecaries should understand their relations to each other better, or change them for the safety of their patients."

We have read the above article with regret—not but that it may contain much truth, and that many of those who practice pharmacy in our sister city may be unqualified for their duty—a fact which applies unfortunately

not only to New York, but to this city and the whole country, and equally to the *medical* profession as to the pharmaceutical. It is to the spirit manifested by the writer that we object. He speaks as though medical men were exempt from liability to accidents, or were generally so well educated as to rarely make mistakes. *Without forgetting that "two wrongs don't make a right,"* we may state that in an experience of more than twenty years in the practice of extemporaneous pharmacy, serving a large range of practitioners, it has fallen to our lot to detect hundreds of errors in the prescriptions of *all grades* of physicians, made by the different causes of inadvertence, forgetfulness, ignorance and carelessness, and with a few rare exceptions our medical friends have acknowledged it as a kindness. We hold it to be the *duty* of the apothecary to invariably exercise his judgment in regard to the prescriptions brought to him; not whether the dose is proper for the disease, or even to make any enquiry about the case, but to satisfy himself that the substances prescribed are such as the doctor intended, and the dose not a poisonous one; that he may in this way detect errors and save the patient, as well as the reputation of the physician. He should not excite suspicion in the messenger that something is wrong, or interfere in any way hurtful to the physician, but quietly to refer the prescription to him for his revision, whilst the messenger is desired to return and the medicine will be sent when ready. In Germany, the best regulated country as regards pharmacy, it is the apothecary's duty to thus refer the prescription, and then if it is reordered to be put up, he is exonerated from all blame.

As regards the last sentence of the writer, it may be well to say, that the practice of pharmacy by medical men in cities where qualified apothecaries exist, is a fruitful source of the very difficulty he complains of. In this city there are about forty of such stores, some of which are left in the hands of boys and ill-qualified assistants during the absence of their proprietors on medical duty. Besides, from motives of competition, the proprietors of neighboring stores, who do not take a stand against indiscriminate counter-practice, are induced to *doctor* their customers *gratis* to get custom. If the *unrecorded* annals of the physician's office in times long past, when the practical duties fell chiefly to the office student, could be explored, some curious and tragical details would be brought to light; and in the absence of the *check* arising from the distinct functions of two professions, it is altogether probable that not a few fatal results of carelessness or ignorance have quietly passed to the account of the virulence of disease, uncommented and unknown. Country practitioners will probably always have to continue the troublesome practice of supplying their patients with medicines—circumstances render it necessary—but it is greatly to be hoped that in cities and towns a broad line of demarcation should be drawn between pharmacy and medicine as one of the best means of raising the standing of the practitioners of both.

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NEW YORK JOURNAL OF PHARMACY.—For some reason unknown, our pharmaceutical cotemporary has not been received since March or April

last, and we have been dependent on a friend for a sight of its countenance. We appreciate its friendly visits too well to be satisfied with their discontinuance, and trust that we shall soon be favored with their continued return. Our country is large enough for both, and there is labor sufficient for half a dozen.

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#### WORKS OF THE CAVENDISH SOCIETY FOR 1852.

- HAND BOOK OF CHEMISTRY. By LEOPOLD GMELIN. Vol. VII. *Organic Chemistry*, vol. I. *Generalities of Organic Chemistry. Organic Compounds containing two atoms of Carbon.* Translated by HENRY WATTS, B. A., F. C. S. London, 1852. pp. 501, 8vo.
- PHYSIOLOGICAL CHEMISTRY. By PROFESSOR C. G. LEHMANN. Vol. II. Translated by GEORGE E. DAY, M. D., F. R. S., &c. London, 1853. pp. 465, 8vo.
- ATLAS OF PHYSIOLOGICAL CHEMISTRY. *Consisting of Microscopic Figures.* By DR. OTTO FUNKE. *Being a Supplement to Lehmann's Physiological Chemistry.* London, 1853.

The books above enumerated constitute the issue of the Cavendish Society of London for the year 1852. The advantages offered by this Society, to the chemical student, are made apparent by the fact, that these three works, which probably, in the ordinary course of publication, would never have been put forth in English, are being presented under the auspices of the Society, all expenses paid, at less than two dollars a volume.

We have neither the time nor the space to notice these works as they deserve. The seventh volume of the "Handbuch" is the first of the six volumes that will embrace the department of organic chemistry. Nearly one half of it is devoted to the generalities of organic chemistry—namely: To the constitution, formation, properties, and classification, of organic compounds; together with nomenclatural suggestions, and a general view of the theory of types. The remainder treats of "Compounds containing two atoms of carbon," the "Methylene series."

The author adopts the nucleus theory, in explaining the constitution of compounds, and he considers that it, "when properly carried out, arranges organic compounds in a natural order, which is as easy of comprehension as the extraordinary variety of the compounds will admit." It has so happened, since the German edition of this volume was published, that several remarkable discoveries have been made, which uphold the Binary radical theory of Berzelius, Liebig and others; and which remove some of the arguments used negatively in favor of the nucleus theory of Laurent, as, for instance, the *non-isolability* of the organic acids and the alcohol radicals, both of which have been accomplished in several instances. In glancing over this work, one is struck with the immense accumulation of observations which chemists have heaped together within the last twenty years. With all the ingenuity of Berzelius, Dumas, Laurent, Liebig, Lowig, Gmelin and others, the simplest arrangement they can make presents so many complexities and anomalies, and requires so much hypoc-



thesis, that the whole subject must be looked upon as in a transition state. Meanwhile, facts will be accumulating, and new laws will be developed, until some mighty mind, like Lavoisier or Berzelius in the past, suited to the work, seizes on the simple, fundamental truths, (which are at the basis of all natural arrangements) and give order and consistency to the whole mass.

It is perfectly appalling to a beginner to take up such a work as Gmelin's, and look through the long columns of complex combinations which the few elements of organic matter are capable of constituting; yet, viewed as a magazine of facts—as a cyclopedia of all that is known in chemistry, the "Handbuch" is a glorious monument to the industry and genius of the author, and a boon of great value to *all* classes of chemists, and to pharmacutists, who frequently have occasion to refer to chemical authorities, even when possessing few claims to the name of chemists themselves.

The Physiological Chemistry of Lehmann is the second of the three volumes. (See vol. xxiv. p. 286, for a notice of the 1st volume.) The second and last part is not yet translated, but will probably appear in the course of the present or early in the next year. This volume is occupied in the description and discussion of the animal juices, including the saliva, gastric juice, bile, pancreatic juice, intestinal juices and contents, the blood, chyle, lymph, milk, seminal fluid, fluid of the egg, mucus, cutaneous secretions, and urine.

In the treatment of his subject the author has aimed as far as possible to confine himself to the known—to facts—as recorded by the most reliable observers. He repudiates the strong tendency to build bold and comprehensive theories on a few results, that even themselves will oftentimes not bear the test of repetition, and the deductions from which are mere chimeras. He remarks, (page 9,) "If ever we cherished the hope of combining the results of former inquiries in one scientific whole, constituting a purely inductive branch of science, in accordance with our view of the method in which physiological chemistry, and more especially the theory of the animal juices, should be treated, our courage would fail, as indeed it often has done, when we attempted the accomplishment of such a task. We believe that, in the first volume, we have already sufficiently explained our view of the very great deficiency of our knowledge in this department of the physical sciences, but there is less a want of positive knowledge than a redundancy of materials, that render it a matter of almost insurmountable difficulty to demonstrate with clearness the pure and unadulterated character of science free from pretentious delusions. We confess that we have therefore abstained from attempting in the following pages to give the whole mass of the results that have been obtained within this department of science from all experiments and observations, whether good or bad; limiting ourselves to facts collected by the best observers, which, as far as our powers and experience permitted, we have compared with the results of our own observations testing the different conclusions and hypotheses by a course of logical inquiry."

We have only space for a few further extracts from the chapter on gastric juice:

"GASTRIC JUICE.—The fluid which accumulates in the stomach after the

ingestion of food, is in its pure state perfectly clear and transparent, almost entirely devoid of color, having at most but a very faint yellow tint; it has a very faint, peculiar odor, and a scarcely perceptible saline-acid taste, and is a little heavier than water. Only a few morphological elements can be perceived in it; and these consist partly of unchanged cells of the gastric glands, partly of the nuclei of these cells, and partly of a fine molecular matter which is produced by the disintegration of these elements. Its reaction is very acid; it is not rendered turbid by boiling; when neutralized with alkalis a slight turbidity may sometimes be remarked. The gastric juice is distinguished from most other animal fluids by the circumstance that it remains for a very long time undecomposed, and that even when a fungus growth (mould) has appeared, it always still retains its most essential character, namely, its digestive power.

"The best method of obtaining gastric juice in a state of the greatest possible purity, is to feed dogs, in whom gastric fistulæ have been artificially formed, with bones which they can readily break to pieces; in the course of from five to ten minutes to open the outer closed extremity of the fistula; and by means of a funnel and catheter to collect the escaping juice, and to separate it by filtration from flocculi of mucus, and any fragments of food that may be present. It is, however, an objection that a considerable quantity of saliva is always mixed with the gastric juice obtained in this manner."

"After Eberle had shown that the gastric juice, when removed from the animal body, retains the property of inducing peculiar changes in the food, and that by digesting the mucus membrane of the stomach with extremely dilute acids, we obtain a fluid which possesses true digestive powers, it was proved by Schwann that it is only the glandular structure of the stomach which possesses the property of yielding a digestive mixture with acids; and further, that corrosive sublimate throws down a precipitate from it which possesses the digestive power in a high degree. To this substance Schwann gave the name of *pepsin*. Wasmann, who investigated the subject even more fully than Schwann, demonstrated that the source of the gastric juice and of this pepsin lay in the gastric glands, which he carefully observed and described; he likewise attempted to exhibit pepsin in a purer state.

"He proceeded in the following manner: The glandular layer in the stomach of the pig, which extends chiefly from the greater curvature through the cardia, was carefully detached and washed, without being cut up; then digested with distilled water, at a temperature of from 30° to 35° F. After some hours, the fluid was poured away, the membrane was again washed in cold water, and then digested in the cold with about six ounces of distilled water, and repeatedly washed, till a putrid odor began to be developed. The filtered fluid was transparent, viscid, and without any reaction; it was now precipitated with acetate of lead or corrosive sublimate; the precipitate was carefully washed and decomposed with sulphuretted hydrogen; the pepsin was then precipitated by alcohol from the watery solution, in white flocks."

"The pepsin thus obtained, forms, when dry, a yellow, gummy, slightly hygroscopic mass; in its moist state it is white and bulky; it dissolves readily in water, and always retains a little free acid, so as to redden litmus; it is precipitated by alcohol from its watery solution; mineral acids induce a turbidity in a solution of neutralized pepsin, which disappears on the addition of a small excess of the acid; but if there be a considerable excess of the acid, there is a flocculent deposit; it is only imperfectly precipitated by metallic salts, and not at all by ferrocyanide of potassium; it has been asserted that pepsin is coagulated by boiling, but Frerichs has shown that the coagulation is merely dependent on its admixture with albumen.

"This substance possesses the converting property in so high a degree, that, according to Wasmann, a solution containing only one sixty-thou-

sandth part, if slightly acidulated, dissolves coagulated albumen in six or eight hours. This property of pepsin is not destroyed by alcohol; and in this respect Wasmann and Schwann coincide; it is, however, lost when the solution is boiled, or carefully neutralized with potash; in both cases the fluid becomes turbid."

"We are as yet unable to make any decisive statement regarding the quantity of gastric juice secreted in 24 hours; indeed, on this point, we are at present entirely devoid of data; we only know that, in the healthy state, its secretion is entirely dependent on the ingestion of food, and that some articles of diet excite a more copious secretion of gastric juice than others. Thus, for instance, sugar, aromatic substances, spirit of wine, and alkalis, when introduced into the stomach, immediately excite an almost overflowing secretion of gastric juice; while, on the other hand, animal substances, which remain for a longer period in the stomach, require a far greater quantity of gastric juice for their perfect conversion.

"According to my experiments, 100 grammes of the fresh gastric juice of a dog cannot, on an average, effect the solution of more than five grammes of coagulated albumen, (calculated as dry.) Now, if we assume that an adult man receives into the stomach about 100 grammes of albuminous matter in 24 hours, there must be secreted 2000 grammes, or 4 pounds of gastric juice for the digestion of this quantity."

The work of Dr. Funke is viewed as a supplement to Lehmann's work; it consists of a series of fifteen plates, each presenting six microscopic views of substances, crystalline and amorphous, of the animal organism. Among the more prominent may be mentioned oxalate of lime, butyric acid salts, lactates, creatin and creatinin, taurin, glycine, hippuric acid, uric acid, cholic acid, cholestearin, vessels filled with chyle in the villi of the small intestines, liver cells, blood corpuscles under various conditions, blood crystals, milk, urinary deposits under different pathological conditions, muscular fibre and nervous fibre. The engravings are executed in Germany, from the original plates, and colored there, specially for the Cavendish Society, so that there has been nothing of their original excellence and accuracy lost by copying. The author observes, "the task which I have undertaken is the graphic representation of all those substances where microscopic and micro-chemical investigation is of importance to physiological chemistry, comprehending in this term all that has received the sanction of Lehmann's work—that is, excluding special phyto-chemistry, and including, so-called, pathological chemistry, which it is altogether impossible to separate from purely physiological chemistry." It has been the object of the author to reproduce the natural objects in the minutest detail, conscientiously "prohibiting the slightest idealization, either by myself or the lithographer." All the drawings are original, and as mathematically exact as it was possible to get them, both as regards angles, and outlines, and proportions. The drawings were executed by aid of one of Oberhauser's large microscopes, and the author preferred to employ, in most instances, one of the lower powers, between 180 and 200 fold, as being better adapted for the use of students, and consequently that the drawings would, from that cause, better correspond with the practical observations of the microscopic student. Although not properly qualified to give an opinion in the matter, yet we cannot refrain from expressing our unqualified satisfaction with the beautiful and accurate delineations which the plates present, and which must prove of essential service to the student of physiological chemistry.



THE  
AMERICAN JOURNAL OF PHARMACY.

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NOVEMBER, 1853.  
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PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL  
CONVENTION.

THE AMERICAN PHARMACEUTICAL ASSOCIATION met at the HALL of the MASSACHUSETTS COLLEGE OF PHARMACY, Boston, August 24th, 1853, at 11 o'clock A.M.

In the absence of Daniel B. Smith, President of the Association, the meeting was called to order by Samuel M. Colcord, of Boston, one of the Vice Presidents.

The Secretary being absent, Edward Parrish, of Philadelphia, was appointed temporary secretary. The roll of the Association being called, nine permanent members answered to their names.

A Committee on Credentials, consisting of Charles Ellis, of Philadelphia, C. Augustus Smith, of Cincinnati, and Samuel R. Philbrick, of Boston, was appointed by the chair.

This committee retired, and after a recess reported the following list of delegates, and gentlemen who are properly recommended for membership, viz :

*From the Richmond Pharmaceutical Society.*—Alexander Duval, James P. Purcell, William S. Beers, S. M. Zachrisson, and W. A. Strother.

*From the Cincinnati College of Pharmacy.*—William B. Chapman, M. D., J. M. Gordon, M. Allen, C. Augustus Smith, and E. S. Wayne.

*From the Philadelphia College of Pharmacy.*—Daniel B. Smith, Charles Ellis, William Procter, Jr., Charles Bullock, and Edward Parrish.

*From the New York College of Pharmacy.*—George D. Coggeshall, J. S. Aspinwall, Thomas B. Merrick, Eugene Dupuy, and Junius Gridley.

*From the Massachusetts College of Pharmacy.*—Daniel Henchman, William A. Brewer, Thomas Restieaux, T. L. Turner, and H. W. Lincoln.

*As a representative of the Druggists and Apothecaries of Terre Haute, Indiana.*—Thomas H. Barr.

The following names were reported on the recommendation of members.

*From Memphis, Tennessee.*—C. B. Guthrie, M. D.

*From Boston, Massachusetts.*—Thomas Hollis, Andrew Geyer, and Emery Souther.

*From Bennington, Vermont.*—S. P. Peck.

*From St. Johnsbury, Vermont.*—J. C. Bingham.

*From Portland, Maine.*—H. T. Cummings, M. D.

The roll being now called, the following members were found to be present; and those who had not already signed the Constitution, proceeded to do so:

Daniel Henschman,	William A. Brewer,	S. R. Philbrick,
Thomas Restieaux,	Samuel M. Colcord,	T. Larkin Turner,
Henry W. Lincoln,	Emery Souther,	Andrew Geyer,
Thomas Hollis,	H. T. Cummings,	S. P. Peck,
J. C. Bingham,	Henry F. Fish,	T. B. Merrick,
Eugene Dupuy,	Junius Gridley,	Charles Ellis,
William Procter, Jr.,	Edward Parrish,	Alexander Duval,
S. M. Zachrisson,	Joseph Laidley,	C. Augustus Smith,
Wm. B. Chapman,	Thomas H. Barr,	C. B. Guthrie.

On motion, a Committee was selected to nominate officers for the Association. The members of this committee were appointed by the respective delegations, as follows:

Philadelphia, W. Procter, Jr.; New York, J. Gridley; Cincinnati, W. B. Chapman; Richmond, S. M. Zachrisson; and Massachusetts, T. Restieaux.

On motion of J. Laidley, the chair appointed the following additional members to represent the undelegated members of the Association: J. Laidley, H. F. Fish, and E. Dupuy. After a recess, the committee reported the following nominations:

*For President.*—WILLIAM A. BREWER, of Massachusetts.

*For Vice Presidents.*—GEORGE D. COGGESHALL, of New York; ALEXANDER DUVAL, of Virginia; C. B. GUTHRIE, of Tennessee.

*For Recording Secretary.*—EDWARD PARRISH, of Pennsylvania.

*For Corresponding Secretary.*—WILLIAM B. CHAPMAN, of Ohio.

*For Treasurer.*—ALFRED B. TAYLOR, of Pennsylvania.

*For Executive Committee.*—WILLIAM PROCTER, Jr., of Pennsylvania; THOMAS B. MERRICK, of New York; JOSEPH LAIDLEY, of Virginia.

The report was on motion accepted.

A motion made by C. Augustus Smith, that the officers now nominated be declared the officers of the Association for the ensuing year, was, after some discussion, negatived.

It was resolved to proceed to ballot separately for the officers named.

C. Ellis and C. A. Smith were appointed tellers, who, after the ballot, reported that all of the gentlemen named had been duly elected to the several offices for which they were nominated.

The President was conducted to the chair, and made an appropriate address.

[In complying with the expressed wish of the Association, the President elect desired to acknowledge his thankfulness for the confidence reposed in him, without attempting a speech, else, like Icarus, in his flight from Minos, he might find his means inadequate, and be precipitated into the Ægean of ill success.

Alluding to the numerous and varied qualifications of the pharmaceutical body in the United States, he remarked that the Association was designed to elevate the status, not merely of the members, but of the whole profession, and through them to benefit the public at large.

In relation to the duties of the chair, he promised his earnest efforts to administer them impartially, in accordance with the received rules of deliberative assemblies, and claimed the sympathy and support of his brethren.

As a delegate from the Massachusetts College of Pharmacy, he welcomed the Association to their Hall, and hoped it might prove a pleasant professional home to all who met on the occasion. He announced that the room would be open at all times during the sessions of the Association; that provision was made for transmitting the letters, &c., to and from the post-office; and that a messenger would be in attendance at the service of the members. Mr. Brewer concluded his remarks by offering for the inspection of the members, a cabinet of specimens of indigenous medicinal plants and roots, pressed, and in bottles, prepared for the occasion by Mr. S. T. Atherton, of the United Society, Harvard, Massachusetts.—EXEC. COM.]

The report of the Treasurer was received, read, and referred to C. A. Smith and H. F. Fish, to be audited.

The report of the Executive Committee for the past year, was read by Professor Procter, its chairman, as follows:

The *Executive Committee* appointed in October last to carry out the purposes of the Convention then held, Report—that immediately after the adjournment of that body, they prepared an account of its proceedings, embracing the chief topics of discussion, with an appendix consisting of the Constitution and Code of Ethics of the Association, together with the reports of Dr. Bailey and Mr. Hamilton on the Inspection of Drugs, of which the accompanying pamphlet marked A, is a copy. One thousand of these were printed and distributed over nearly every State in the Union, by the members of the Committee.

The expenses incurred in getting up the "Proceedings," were not met by the funds in the treasury. The deficit, together with the expenses incident to the distribution of the pamphlet, &c., will be found in the accompanying document marked B.

It having been "Resolved that the Executive Committee be requested to obtain, through the several Colleges of Pharmacy and Pharmaceutical Associations," answers to the resolutions adopted by the Convention in reference to statistics; this Committee communicated with the several bodies indicated, and have received reports from Boston, Philadelphia, Richmond, Cincinnati, and New York, which are marked C, D, E, F, G, in the annexed papers.

As a large portion of the United States lies beyond the immediate influence of the organized bodies, the Committee deemed it proper to take advantage of the Circular issued by the Philadelphia College to query in the several States south and west, and although the apathy of many persons addressed has prevented the resulting information from being full and uniform, yet it is sufficiently interesting to communicate. In reference to the Richmond report, it is proper to state, that it is not the result of any action of the Society, but comes from the president in his individual capacity, and its brevity has induced the Committee to avail themselves of the full communications of Mr. Laidley, of Richmond, Dr. Cooke, of Fredericksburg, Dr. Stabler, of Alexandria, and Mr. C. A. Santos, of Norfolk, to present a view of the condition of pharmacy in Virginia. In regard to most of the Southern and Western States, our information has been only



enough to get a general idea of the condition of our *art* there; the large proportion of agricultural population, and the few large towns and cities that exist, give a more uniform cast to the pharmaceutical peculiarities of that region. The untimely death of our associate, Mr. C. L. Bache, of San Francisco, deprived us of an expected report on the state of Pharmacy in California; yet, owing to the thoughtfulness of Mr. Gustavus L. Simmons, of Sacramento, in that State, we are enabled to give a partial account of it, which will be found, with the other information, in the document marked H.

The Executive Committee, although not specially so instructed, have deemed it their province to bring forward such suggestions, regarding subjects properly claiming the consideration of the Association that have not been specially referred to Committees, as have presented themselves in the course of their official duty, and now offer the following propositions, viz:

1st. To increase the future usefulness of the Association, it is proposed that a system of local secretaryships be adopted, which in the beginning may be limited to the larger cities and chief towns, and so distributed over the several States, as to enable the Corresponding Secretary and the Executive Committee to obtain and distribute information in an effectual manner. At first, it is proposed to appoint the local secretaries from among pharmacists known to reside in the localities chosen; and afterwards, if more agreeable to the body at large, in each place, the name of a person for secretary may be suggested by his brethren as their medium of communication, to be confirmed at a meeting of the Association. We believe that there are qualified persons who have the good of the profession at heart in most of the cities, and that such an organization would greatly increase the power of the Association in carrying out its disinterested measures for the advancement of pharmacy.

2d. It is recommended that the collection and arrangement of the Statistics of Pharmacy in the United States, be committed to a special committee, properly authorized to act for the Association, in such manner as shall most effectually and speedily obtain a list of the reputable druggists and pharmacists in each place; ascertain the degree to which medicine and pharmacy are separated; the condition of dispensing pharmacy; the condition and progress of preparative or manufacturing pharmacy; the extent to which the apprenticeship system prevails, and whether any attention is given to furnish apprentices with proper books for the study of their business; and finally, whether there is any disposition to organize local societies.

3d. It is suggested that the subject of pharmaceutical education be entrusted to a special committee at the commencement of the session, that they may have time to prepare an address to the pharmacists of the whole country, which shall enter into the practical difficulties which oppose the attainment of pharmaceutical knowledge by assistants and apprentices, point them out, and encourage the brethren to extend reasonable aid to those in their service, both by personal interest, and by providing books and the opportunity to use them;—and also shall recommend attention to the proper preparatory education and mental fitness of apprentices for the responsible offices involved in their duties.

4th. It is proposed that the *idea* of universally adopting a single definite name, which shall indicate the qualification for preparing and dispensing drugs and medicines, as possessed by thorough-bred chemists and druggists, or apothecaries, be considered, and its propriety decided on. The word "Physician" indicates a person educated to practice medicine in all its branches; why should not "Pharmacist" define a qualified practitioner of pharmacy?

5th. It is recommended that the Association shall earnestly advocate the *extensive issue of a cheap* and accurate edition of the United States Pharmacopœia; say at the price of seventy-five cents or one dollar. Of the large number of persons who, in this country, lay claim to the names of apothecaries and physicians, a great proportion have never seen the Pharmacopœia as a separate and distinct work, a fact easily understood, when it is stated that but 1500 copies are published in ten years! In many localities the U. S. Dispensatory is considered to be the Pharmacopœia. Physicians are constantly prescribing medicines under unofficial names, and apothecaries making official preparations by

foreign formulæ, because in the dispensatory the receipts are all commingled in such a manner as to lead to confusion. This would be prevented, and a greater uniformity of practice created, by making the Pharmacopœia, with its clearly defined recipes, the guide at the counter, and in the laboratory, for the official preparations.

6th. We believe that the action of the Association should not be limited to the practical, the ethical, and the educational interests of the profession,—should not stop within the limits of self-improvement. American pharmacutists owe a large debt to their brethren in Europe, for a constant influx of knowledge, the result of their past and present investigations in pharmacy and its accessory sciences; and the time has fully arrived, when, as Americans, they should feel bound to render a larger return than individual efforts have heretofore accomplished. The pharmaceutical societies of Europe, offer annually, prizes for the determination of questions deeply interwoven with the practice or science of pharmacy, and thus elicit valuable accessions to existing knowledge. We believe that the Association is now competent to adopt a course of this kind, as an incitement to dormant ability, and to awaken laudable ambition. At first, if the idea is adopted, the prizes should be limited in value, except as symbolic of reward for honorable and successful enterprise.

To make the proposition clearer, a few questions appropriate for such objects will be instanced.

a. It is conceded that *Digitalis* of American growth is less active and efficient as an arterial sedative and diuretic than that of English origin. Is this deterioration due to the less abundant formation of *digitalin*; to its modification; or to any other definable cause?

b. What are the impediments, if any exist, to the free cultivation of *Colchicum autumnale* in the United States, so as to preserve its power unimpaired; and is it true that the recent *cormus* is more active than the same carefully dried, and if so, why?

c. Do *Hyoscyamus* and *Belladonna*, grown in the United States, contain the active principles in the same proportions as the European plants?

d. *Spigelia* is admitted to possess positive anthelmintic power. Does this power reside in a distinct, well-defined principle, capable itself of producing the effects of *Spigelia*; if so, isolate and describe it?

e. The best essay on extemporaneous pharmacy which shall treat of the incompatible combinations most usually prescribed, the best manner of avoiding them, and the most efficient methods of proceeding in effecting the union of substances that are physically incompatible, as emulsions, certain liniments, certain pill ingredients, &c.

f. For the best essay on the identification of volatile oils when mixed, their preservation, and the actual effects of light and air on them, under the ordinary circumstances that they are kept in the shop, so as to decide the question whether all of them, or only a part, should be kept in the dark, to prevent change?

g. For an essay which shall develop the commercial history of all drugs indigenous to the United States, as *senega*, *spigelia*, *serpentaria*, &c., as regards the manner and places of their collection for the supply of commerce, the annual amount collected, and the channels through which they enter general commerce.

h. For the best essay on the construction and material of pharmaceutical apparatus, including that for evaporation, distillation and solution more especially, as regards economy, convenience and effectiveness; with a view to the ordinary wants of a thorough pharmacist.

Such are a few of the questions which might be offered. The nature and value of the prizes, and the local or general invitation to the competition, will require mature consideration, should the idea be adopted.

7th. An efficient committee might be appointed to inquire into the nature, extent, and locality of *home adulterations*, and propose a remedy.

8th. Whether it would be advisable to appoint a committee to consider the subject of state and municipal laws in relation to controlling the trade

in drugs and medicines, and whether such laws would be likely to prove salutary, without oppressing the well-disposed druggist and pharmacist.

(Signed)

WILLIAM PROCTER, JR.,

GEORGE D. COGGESHALL,\*

*On behalf of the Executive Committee.*

Pending the reading of the Statistical reports accompanying it, the Association, on motion of D. Henchman, adjourned till half-past 3 o'clock in the afternoon.

#### AFTERNOON SESSION.

The members generally assembled, the President in the chair.

The Committee to audit the Treasurer's account, made a written report that it was correct, and they were discharged.

In the absence of the Treasurer, W. Procter, Jr., was appointed to serve in his place, and proceeded to collect the annual contributions of members present.

The following, offered by Jos. Laidley, was adopted.

Resolved, That the members and officers of the Massachusetts College of Pharmacy, be invited to attend the sittings of the present meeting of the American Pharmaceutical Association.

The Chairman of the Executive Committee proceeded with the reading of the documents accompanying his report, till finished. On motion of C. B. Guthrie they were accepted.

The Committee appointed last year to consider the whole subject of the Inspection of Drugs, with reference to fixing standards for imported drugs, presented a report, which was read, and on motion accepted.

[The report of this Committee was a voluminous document, and not being among the papers authorized to be published in the "Proceedings" by the Association, we have made a few extracts, to render the minutes which follow more intelligible than they are in the authorized publication. The report was written by the chairman, Alfred B. Taylor, of Philadelphia, and signed by that gentleman and Mr. Meakim, of New York; the other members of the Committee, Dr. Stewart, of Baltimore, and Mr. Burnett, of Boston, did not see or sign it.

The Committee frankly acknowledge the very great difficulty of carrying out the view of the Convention of 1852, by fixing standards for the judgment of drugs. They say: "To decide between articles of so high a standard as to be just below passable, and others of so low a standard as to be barely admissible, or, in other words, between the best rejected and the worst admitted drugs, is a task requiring the exercise of sound judgment and the wisest discrimination." In the case of chemical preparations, many of the gums, gum resins, some of the roots, woods, barks, &c., it will perhaps be no very difficult matter to assign satisfactory standards; that, whilst they will exclude adulterated and deteriorated articles, will not interfere with the business arrangements of the honest importer; whereas, in the case of herbs, leaves, flowers, and extracts, many of the essential oils, &c., it will be very troublesome, if not utterly impossible, to devise means whereby they may be uniformly judged of."

"After a careful consideration of the subject, the Committee believe that the opinion advanced by one of its members, Dr. Stewart, at our last Convention, that "all varieties of drugs that are good of their kind should be admitted by the

\* Mr. Joseph Burnett, the third member of the committee, was absent in Europe, and did not see or sign the report.



special examiners," is correct; and that it forms the only safe and just basis on which to found a rule whereby the Examiner should be governed. If an article is to be condemned on the ground that it will or may be used for adulterating purposes after it is imported, it is difficult to see where will be the limit to these stoppages."

"The question naturally arises, What constitutes 'good of their kind?' a question much more readily asked than answered. To define precisely what drugs are so, involves a thorough knowledge of the materia medica, of the properties and appearances of the articles composing it, of their deteriorations by age, moisture, and other causes, together with the adulterations they are liable to, and the means of detecting them.

"The Committee have thought that this can be most readily and effectually settled by the method they are about to propose. We have prepared and herewith present two lists, embracing all the articles recognized by the United States Pharmacopœia as constituting the materia medica, together with the preparations that are official in that work. The first list comprises chemical preparations and such other articles as we think it practicable to devise standards for; whilst the second list is composed of herbs, roots, flowers, &c., which cannot so well be judged of by their chemical constituents as by their physical and apparent properties. It will be seen that we have also included in this second list the essential oils, tinctures, extracts, &c., articles that unfortunately are often adulterated or deteriorated, but many of which, we must confess, we are at a loss how to test, even when we suspect them to be so.

"We propose that these lists be considered by the Association, article by article, so that we may have the opinion of the Association as to what articles they may consider it practicable to have standards for." \* \* \*

"When the list is arranged, let it be apportioned off amongst the different Pharmaceutical Associations present; whose duty it shall be carefully to examine the articles assigned to them, especially as regards their deterioration and adulteration, and to devise tests for the detection of such adulterations, and at the same time to arrange standards of purity, whereby they may be judged, not only by the drug examiners, but also by druggists and physicians: the whole to be reported to the Association next annual session."

The Committee then enter into a discussion of the late circular of instructions issued by the Treasury Department, and take exceptions to several parts of it. The direction that all articles of merchandise used partly in medicine shall be submitted to examination by the Special Examiner before passing the Custom-house, they considered unjust, as bearing oppressively on manufacturers, who consume of many of these articles in by far the larger proportion, as white lead, arsenic, litharge, mastic, galls, &c.

They think a wide discrimination should be made in favor of the manufacturer, when bonds are given for the legitimate use of articles required by them.

They think European rhubarb should be admitted.

They believe some of the standards adopted are too high for practical purposes. The standard for opium, for instance, "nine per cent. of pure morphia," which is equal to 11.89 per cent. of the crystallized sulphate, is above the average yield of good commercial opium.

They consider the standard for elaterium (30 per. cent. of elaterin) too high.

They regard the amount of soluble matter in rhubarb and senna, as a bad criterion of their quality.

In relation to secret or patent medicines, they believe the law gives the Examiner no right to exclude them, unless they fall under its condemnation. They wish it understood that they are in favor of excluding these medicines, if legally done, but do not believe the present law gives the power.

They "think the construction recently put by the Hon. Secretary of the Treasury upon the fourth section of the law, as passed by Congress, 26th June, 1848, is erroneous and illegal;" because it prevents the report of the analytical chemist from being final, as positively asserted by the law.

The Committee conclude their report by declaring that "the best devised system of standards and tests will be of no avail unless the officers to whom is

entrusted the execution of the law have the requisite qualifications of judgment and ability, or, in other words, are honest and competent; and we think that such an officer, acting under a few general instructions, relying on a correct knowledge and sound judgment, with a determination not to admit adulterated or deteriorated drugs, will find much less trouble in carrying out the law satisfactorily, than he would under more complicated instructions."—EDITOR AMER. JOUR. PHARM.]

C. B. Guthrie moved the report of the Committee on the Sale of Poisons be postponed till to-morrow. The motion was not agreed to, and the report was accordingly read.

The Committee to whom was referred "the subject of the indiscriminate sale of poisons, as now conducted by apothecaries, druggists and others, as regards the practicability of effecting some useful reform in the present state of the traffic," Report: that they have been engaged since the time of their appointment in endeavoring to collect information relating to the subject, and in considering it in view of the object of the Association; yet they have been but partially successful. In the course of their inquiry the measures adopted by European legislators, naturally claimed attention, and what they now have to offer will include a notice of the measures legalized in Europe, the condition of the traffic in this country, and suggestions tending to regulate the sale of *popular* poisons in this country.

In Prussia, and perhaps in Germany generally, the law requires the apothecary to keep poisons in a closet under lock and key, and not to sell them but under certain conditions to persons free from suspicion. The poisonous substance, be it arsenic or other, must be enclosed in a box, tied, sealed and inscribed with the German or French name, and the Latin name; and marked with a *Death's head* or *three Crosses*. It is also necessary, in some of the German States, for the purchaser to give a receipt declaring the name and quantity of the poison, that it was dispensed according to regulations, and that the seller is exonerated from all blame for its misuse.

In France, the law designates the substances considered poisons in view of the Government, which are required to be kept under lock and key, much to the annoyance of the *Pharmaciens*. These substances are *Hydrocyanic Acid*, the *poisonous vegetable alkaloids* and their salts, *Arsenic* and its preparations, *Belladonna* and its extract and tincture, *Cantharides* in substance or extract, *Chloroform*, *Hemlock* and its extract and tincture, *Cyanide of Mercury*, *Cyanide of Potassium*, *Digitalis* its extract and tincture, *Tartar Emetic*, *Hyoscyamus* its extract and tincture, *Nicotine*, *Nitrate of Mercury*, *Opium* and its extract, *Phosphorus*, *Ergot of Rye*, *Stramonium* extract and tincture, and *Corrosive Sublimite*.

In Great Britain, the country most analogous to our own in the character of its population, and the legal and economical usages that exist, the sale of poisons until recently was completely unrestrained by law, except perhaps a few municipal regulations. In the latter part of 1849 the subject of the loose manner in which the sale of poisons was conducted, and the frequent ill results that followed, was brought to the attention of the House of Commons by the Provincial Medical and Surgical Association, praying that no druggist be allowed to sell arsenic without a license, under penalty; that *no person* be allowed to sell small quantities of arsenic unless combined with some distinctive coloring material, that every purchaser must have a witness, and that every vender should keep a strict record. The petitioners stated that, of the fatal cases of poisoning, *one-third* were from arsenic, and that in 1837-8 these cases amounted to 185!

Pending the action of Parliament, the subject was referred to a Committee by the Council of the Pharmaceutical Society, who, as a preparatory step, issued a circular of inquiries to 1600 members, over England and Scotland, querying whether the parties sold arsenic; under what regulations, if any, for what objects and to what classes of persons, what trades employ it, whether general

dealers sell it, would it do to prohibit its retail sale, how is it dispensed, what number of accidents and whether these occur from its use by agriculturists?

The Committee reported that a majority of the *Chemists* and *Druggists* require witnesses in selling arsenic, label the inner and outer wrappers, and some color it. The classes of persons who buy arsenic are colorists and chemical manufacturers, candle-makers, farmers, flock-masters, veterinary surgeons, shipwrights, glass manufacturers, and dyers, in large quantities; and braziers, whitesmiths, bird stuffers, gamekeepers, gardeners, grooms, whitewashers, painters, pyrotechnists, ratcatchers, and housekeepers of all grades, for vermin, in small quantities. They ascertained that arsenic was employed most extensively through the agricultural districts, both for *sheep-dipping* and for *steeping wheat*. About 40 lbs. of arsenic are required for every 1000 sheep to kill vermin. Of 728 answers, 509 advocated prohibition; yet the numerous legitimate uses of the poison render its sale necessary. One large farmer had killed in a year more than 40,000 rats. The Committee arrived at the following conclusions, viz:—

1st. That with regular chemists and druggists, proper precautions are taken and few accidents occur.

2nd. That the unrestricted sale of poisons in general by *unqualified persons* is the great source of danger.

3rd. And that the total prohibition of the retail sale of arsenic is impracticable and inconsistent with the requirements of legitimate trade.

Subsequently on the 5th of June, 1851, Parliament enacted a law requiring

1st. That all arsenic sales shall be witnessed by a third party when the purchaser is unknown to the vender.

2d. That all arsenic sales shall be registered in a book in a specified form.

3d. That not less than ten lbs. of arsenic shall be sold unless colored by soot or indigo, unless for a specified purpose in the arts, under a penalty of \$100.

4th. That the Act shall not apply to arsenic used medicinally, or to the intercourse between wholesale and retail dealers.

5th. And that the word "arsenic" includes all preparations of arsenious and arsenic acids and other colorless poisonous preparations of arsenic.

The Act was confined to arsenic because it was the most generally known and most accessible poison, and because restrictive legislation on the whole list of poisons was looked upon as impossible. The poison is sold in all quantities, from a pennyworth up, at petty stores and by general dealers in England, and the Arsenic Act, without depriving these of their right to sell, compels them to do it as above.

To the correspondence they have instituted, your Committee have received answers from parts of Pennsylvania, Vermont, New Hampshire, Maryland, the District of Columbia, Virginia, North Carolina, Georgia, Florida, Mississippi, Louisiana, Tennessee, Missouri, Indiana, Ohio, and California.

It appears that but little State legislation has taken place in regard to the sale of poisons. In Ohio an Act somewhat similar to the English "Arsenic Act" was passed soon after the latter, requiring the poison to be mixed with soot or indigo before being retailed, yet but little regard is had to it in practice.

[The following is a copy of the Ohio law, taken from the Cincinnati Report.

SEC. 1. *Be it enacted by the General Assembly of the State of Ohio*, That it shall not hereafter be lawful for any apothecary, druggist, or other person in this State, to sell or give away any article belonging to the class of medicines, usually denominated poisons, except in compliance with the restrictions contained in this act.

SEC. 2. That every apothecary, druggist, or other person who shall sell or give away, except upon the prescription of a physician, any article or articles of medicine belonging to the class usually known as poisons, shall be required:

1st. To register in a book kept for the purpose, the name, age, sex, and color of the person obtaining such poison.

2d. The quantity sold.

3d. The purpose for which it is required.

4th. The day and date on which it was obtained.



5th. The name and place of abode of the person for whom the article is intended.

6th. To carefully mark the word "poison" upon the label or wrapper of each package.

7th. To neither sell nor give away any article of poison to minors of either sex.

SEC. 3. That no apothecary, druggist, or other person, shall be permitted to sell or give away any quantity of arsenic less than one pound, without first mixing either soot or indigo therewith, in the proportion of one ounce of soot or half an ounce of indigo, to the pound of arsenic.

SEC. 4. That any person offending against the provisions of this act, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined in any sum not less than twenty, nor more than two hundred dollars, at the discretion of any court of competent jurisdiction.

SEC. 5. This act to take effect and be in force, from and after its passage.—*Exec. Comm.]*

In New Hampshire a State law exists requiring "Every apothecary, druggist, or other person, who shall sell any arsenic, corrosive sublimate, nux vomica, strychnia, or prussic acid, shall make a record of such sale in a book kept for that purpose, specifying the kind and quantity of the article sold, and the time when, and the name of the person to whom such sale is made, which record shall be open to all persons who may wish to examine the same."

The other sections exempt physicians prescriptions, and provide a penalty of \$100, for the violation of the first section. Mr. Edward H. Parker, of Concord, N. H., in giving this information, states, that the law is almost if not entirely ineffectual, and that not more than one in five of the druggists pretend to keep such a record, and some are not even aware of its existence. The effect has been to confine the sale of poisons to the druggist, as "grocers and shop-keepers rarely, if ever, retail arsenic or other poisons specified in this law."

[The following law of the State of New York is derived from the report of the N. Y. College of Pharmacy, on statistics. "Every apothecary, druggist, or other person, who shall sell or deliver any arsenic, corrosive sublimate, prussic acid, or any other substance or liquid usually denominated *Poisonous*, without having the word poison written or printed upon a label attached to the phial, box or parcel in which the same is sold; or who shall sell and deliver any tartar emetic, without having the true name thereof written or printed upon a label attached to the phial, box or parcel containing the same, shall upon conviction be adjudged guilty of a misdemeanor, and shall be punished by a fine not exceeding one hundred dollars." *Exec. Comm.]*

Through Mr. Peck, of Bennington, it appears that no law bearing on the sale of poisons, exists in Vermont. The regular druggists take generally the proper precautions, but at nearly all of the little stores in the villages throughout the state, arsenic, opium, and even *strychnia* are sold without being labelled.

In the large cities, the better class of druggists and apothecaries are exceedingly careful in the sale of all poisons; many refuse to sell arsenic at all except in medicine, and strychnia and poisons of that kind are refused without a prescription; except in special cases, where the applicant is well known and the purpose obvious to the vender. Yet it cannot be denied that many others, while careful to label poisons, are not sufficiently discriminative in their sale. It has become usual in many places to employ corrosive sublimate as a *bug poison*. Many druggists require that the purchaser shall bring a bottle that can be properly labelled—some are willing to sell the poison in substance, and risk its subsequent appropriate use. In view of the abundant employment of this poison in families, often put in the hands of servants—it is surprising that so few accidents occur with it.

Our inquiries from correspondents in the South and South West, exhibit that no State laws exist restricting the sale of poisons, to persons not suspicious, yet there is an universal practice of refusing arsenic and other poisons to the black population, unless they bring a satisfactory order from employers or owners. In middle Florida, "opium, morphia, strychnia, nux vomica and arsenic" can

be procured from the general storekeepers without difficulty, and the practice of keeping poisons for destroying vermin and animals, by the country storekeeper, is very common throughout the whole Western, Southern, and Middle States. Perhaps the chief demand for arsenic from country stores is by farmers and millers as a *ratsbane*. The tastelessness and effectiveness of this poison renders it superior to all others for this purpose, and hence its employment in mills and barns, where it has too often occasioned accidents to horses and to poultry; to the latter from the sweepings of the mill floor, sold commonly for the purpose of feeding such stock. Several valuable horses were destroyed in this way near Bladensburg, Maryland, a few months since.

Our correspondent at Sacramento California, Mr. G. L. Simmons, states, "that large quantities of all kinds of poisons are sold by grocers as well as by druggists. The larger part is used for the destruction of animal life. The regular sales of *strychnia* must be immense. Its more speedy effects than most other poisons is liked by the "Ranche-men," who are the principal customers. Arsenic, is also sold but chiefly as *ratsbane*. Since the year 1849, no case of poisoning by arsenic has come to my knowledge."

We have reason to believe that a large proportion of the *strychnia* made, is used to poison wolves and other carnivorous wild animals in the newly settled territories where the population is sparse. It is generally admitted, that the sale of arsenic by druggists in the Atlantic cities has increased many fold within ten years. The quantity is vastly too great for use as a poison, and we believe the demand is chiefly attributable to the requirements of new branches of manufactures, and, perhaps, by wool growers. In reference to *strychnia*, the increased use of which is directly attributable to the pioneers and hunters of our extensive and rapidly peopling territories, both for the purposes of the fur trade, and protection from the dangerous carnivora, it may be stated that from the best data the committee can arrive at, between 5,000 and 6,000 ounces are manufactured annually in this country, from about 120,000 pounds of *nux vomica*, besides what is imported; and that one manufacturer of Philadelphia, in the year ending June 3, made 1840 ounces from about 40,000 lbs. of that drug.

As regards cases of suicide, the poison most frequently chosen is *laudanum* or opium, not only because it can be readily obtained without suspicion, but because the suffering is avoided. The immense increase in the consumption of opium and its preparations, is a subject that deeply concerns the well wisher of society. Their substitution for alcoholic liquids is but too frequent. The Committee have not entered into this branch of their inquiry, however, and have not obtained any facts to communicate.

In making any suggestions with a view to remedying the evils appertaining to the trade in poisons, the committee feel the necessity of keeping in sight the habits and peculiarities of the people who are consumers, and do not believe that the stringent measures adopted in Europe are calculated to work well in this country. The absolute free trade which now exists, and its general use as a *ratsbane*, exhibits a remarkable carefulness in the use of arsenic, in so far as fatal accidents are concerned. We believe that by far the larger portion of apothecaries and retail druggists are careful in labelling this poison, and observe some discrimination in its sale. As a class, they are better fitted by their knowledge and judgment to guard against mal-uses than general dealers. We are therefore prepared to recommend to the Association that the State Legislatures, who have not enacted laws on this subject, be petitioned to pass laws in their several jurisdictions, confining the sale of arsenic, corrosive sublimate, opium, *strychnia* and other poisons popularly known as such, for destroying life, to druggists, apothecaries and physicians, who shall keep an accurate record of such sales. That such sales shall not be made to minors or servants, unless properly authorized by a responsible person; that all packages or bottles shall be distinctly labelled with the name of the poison, and the word "poison!" or a death's head symbol, conspicuously printed, and that any sale of poisons followed by accident, in which these precautions shall not have been observed, be considered a misdemeanour punishable by legal process.

And to further recommend that the druggists and apothecaries of the United

States, do voluntarily adopt a system of precautions in the sale of poisons, both for their own sake and that of the community, in view of the probable non-action of the legislative bodies.

They believe that the community can be needfully supplied, even in the rural districts, from their physician, who necessarily keeps medicines, or from the apothecary in the nearest town, and a check would thus be given to the facility of obtaining the poison, by the consequences of neglecting the legal precautions.

WILLIAM PROCTER, JR.,  
S. R. PHILBRICK,  
ALEX. DUVAL,  
GEO. D. COGGESHALL,

*Committee.*

On motion, the report was accepted.

The Committee on Secret or Quack Medicines introduced a written report, which was read, and, on motion, accepted.

C. Augustus Smith moved, that when we adjourn, we do so to meet at half past seven o'clock this evening, which was adopted.

The following record was, on motion of the Secretary, directed to be entered on the minutes, by a unanimous vote.

This Association has learned with deep regret the death of an esteemed associate, present at its last annual meeting, Charles L. Bache, of San Francisco, California. His amiable disposition, and the probity of his professional and business character, located as he was upon the very frontiers of the profession of pharmacy, had gained for him the respect and esteem of the members of the Association, and have drawn from them this spontaneous tribute to his memory.

#### EVENING SESSION.

Vice-President Alexander Duval in the chair.

The report of the Executive Committee was taken up, and the suggestions therein contained, of subjects proper to claim the attention of the Association at its present meeting, were considered in the order in which they were introduced in the report.

1st. *The proposition for "Local Secretaryships."* After much discussion in regard to the proper functions, rights, and mode of appointment of these officers, and whether they should be constituted full members or only semi-official correspondents of the Association, C. B. Guthrie, of Tennessee, offered the following resolution:

"Resolved, That Mr. \_\_\_\_\_, of \_\_\_\_\_, in the state of \_\_\_\_\_ be and is hereby appointed local correspondent for this Association, for the ensuing year." These blanks to be filled, and the number selected in this way to be increased at the pleasure of the meeting. Pending the consideration of this, C. A. Smith moved a reference of the whole subject to a Select Committee, to mature a suitable proposition to meet the object, and report as early as practicable, which was adopted. The chair appointed C. A. Smith, H. F. Fish, and W. Procter, Jr.

2d. *The recommendation for a Special Committee on the collection*



and arrangement of the statistics of pharmacy in the United States, was adopted, and five fixed upon as the number of members of the Committee. The chair appointed the following members to the service: C. B. Guthrie, T. B. Merrick, Joseph Laidley, W. B. Chapman, and H. T. Cummings.

3d. *The preparation of an Address on Pharmaceutical Education.* This was on motion referred to a Special Committee of three, to report at the next annual meeting. William Procter, Jr., (Chairman,) David Stewart and John Meakim, were subsequently appointed by the Chair to this duty.

4th. *The suggestion that the idea be entertained of adopting a definite name to define a qualified practitioner of pharmacy.* A motion was made that the members of the Association adopt the name Pharmacia to designate their profession, but objection being made to it, the resolution was withdrawn.

5th. *The recommended issue of a cheap edition of the Pharmacopœia.* Professor Procter offered the following resolutions, which were adopted :

Resolved, That in the opinion of this Association, the cause of pharmaceutical progress will be greatly advanced by the publication of a large, cheap, and correct edition of the United States Pharmacopœia, in duodecimo form, as it will enable every apothecary and physician to possess a copy of that Code, and thus familiarize the classes of persons for whose government it was created, with its real nature, extent, and requirements.

“Resolved, That the Committee of Revision and Publication of the United States Pharmacopœial Convention of 1850, be earnestly requested to authorize the issue of such an edition of that work.”

The Committee to whom the proposition for local secretaryships was referred, now made a report, proposing an additional article to the second section of the Constitution, which, under the rules, must lay over to a future sitting.

Also, E. Parrish moved, in section 2, article 4, of the Constitution, to strike out the words, “in attendance at the annual meetings.”

Resuming the consideration of the Report of the Executive Committee, the meeting proceeded to consider

6th. *The suggestion in regard to appropriate subjects for prize essays.* This was on motion postponed.

7th. *The proposition in relation to home adulterations* was adopted, and on motion of C. B. Guthrie, it was resolved to appoint a Committee of three to inquire into the nature, extent, and locality of home adulterations, and propose a remedy. C. B. Guthrie, (chairman,) G. D. Coggeshall and C. A. Smith, were subsequently appointed by the Chair.

8th. *The subject of State and Municipal laws controlling the sale of drugs.* This was on motion postponed.

Adjourned till half-past nine o'clock to-morrow morning.

AUGUST 25th—MORNING SESSION.

Vice President Alexander Duval presiding.

The minutes of yesterday's session were approved.

George D. Coggeshall, of New York, who was absent at the previous sessions, appeared and took his seat as first Vice-president.

The proposal to amend the Constitution, offered yesterday by the Special Committee on local secretaryships, as amended by E. Parish, was now read and adopted, as follows :

Addition to section 2d, Constitution, article 6. "At each annual meeting the Association may appoint correspondents in any part of the Union, whose duty it shall be to communicate to the Corresponding Secretary any information which they may be enabled to obtain on subjects of interest to the Association, such correspondents who are not members, when accepting the appointment, to be entitled to membership on signing the Constitution and Code of Ethics, and on payment of the annual contribution."

The further proposition to strike out from section 2, article 4, the words "in attendance at the annual meetings," after some discussion, was adopted as follows :

"Article IV. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution."

Andrew Geyer, of Boston, moved the following, which was adopted :

Ordered, That a Committee of three be appointed to inquire into the expediency of obtaining a form of certificate of membership, for the use of this Association, with such insignia or device, or otherwise, as shall in their opinion be deemed suitable, and report their doings at the next annual meeting.

The chair appointed A. Geyer, chairman, and C. Ellis and Joseph Laidley, the Committee.

The Committee on Credentials introduced the names of Ashel Boyden, of Boston, Mass. ; Thomas Farrington, ditto ; William B. Little, San Francisco, Cal., as recommended for membership. The former being present, signed the Constitution and paid his yearly contribution.

The President of the Association, being now present, resumed the Chair. The report of the Committee on the Inspection of Drugs was now on motion taken up.

Geo. D. Coggeshall, of New York, offered a letter received by him from Dr. Bailey, special examiner of drugs at the port of New York, which on motion was read.

S. M. Colcord, of Boston, moved it be received and placed upon the files. Adopted.

[ This Letter was obtained from Dr. Bailey, through the solicitation of Mr. Coggeshall, as a report on the progress of Drug Inspection since last meeting. The letter is too long to insert entire, yet as only one item in it was directed to be published by authority of the Association, we will give a general idea of its contents. Dr. Bailey cheerfully responds to the request, to the extent permitted by his slight leisure. In reference to the quantity of drugs imported and passed at New York, he regrets that it is not in his power to give an accurate statement, but believes that the average is about 200,000 packages annually. The weight or value he has no means of determining. This inability arises from no provision having been made by Congress to keep such records, which would require the services of a clerk. In his communication of last year, to be found in the proceedings of the Convention of 1853, Dr. Bailey gave an exposé of all the important articles rejected by him to that date, and remarks, "I now in continuation, mention the more important articles rejected by me during the some eleven months that have transpired since the date of the communication above referred to :

Senna, - - - - -	11,820 lbs.
Rhubarb, - - - - -	610 "
Spurious Peruvian Bark, - - - - -	38,459 "
Scammony, - - - - -	495 "
Opium, - - - - -	675 "
Squills, - - - - -	1,537 "
Sugar of Lead, - - - - -	11,017 "
Gum Benzoin, - - - - -	860 "
Lac. Sulphur, - - - - -	3,620 "
Carbonate of Magnesia, - - - - -	3,900 "
Calcined Magnesia, - - - - -	875 "
Manna, - - - - -	720 "
Aloes, - - - - -	246 "
Sarsaparilla, - - - - -	4,370 "
Guaiacum Resin, - - - - -	1,130 "
Gum Myrrh, - - - - -	837 " "

Making together some 90,000 pounds exclusive of various medicinal preparations, nostrums, &c., in small quantities, rejected from time to time, but not considered of sufficient importance to specially note. The sum total of the various drugs, medicines, &c., rejected by me since the day the law went into operation at this port (July 12, 1848) is some 710,000 pounds."

"I am happy to find that the Circular Instructions lately issued by the Secretary of the Treasury, explanatory of the spirit and intent of the Law regulating the importation of drugs, &c. meets with very general approval. They have long been needed, and will prove of great use and benefit to those who may be intrusted with the administration of said law. Whilst they will relieve the Special Examiners from much embarrassment, heretofore experienced for the want of some special standard by which to govern themselves, they must of necessity, if honestly adhered to, produce a perfect uniformity of action among that class of officers at the different ports of entry. It is possible that those who argue that everything 'good of its kind' in the way of drugs should pass the Custom House for consumption, may not particularly relish these high-toned standards. Egyptian Opium, Montpellier Scammony, French and English Rhubarb, Bastard Jalap, Jalap tops, spurious Cinchona Bark, furnishing on analysis none of the natural alkaloids, together with many other articles of so called drugs that could be mentioned, all good of their kind, would, I admit, find little favor with the Special Examiner acting under present instructions."

In speaking of the necessity of uniformity in the action of the several Examiners, Dr. Bailey complains of a practice in vogue by some importers, of entering goods at other ports *in bond*, where they are examined, and afterwards sending



them coastwise to New York, where, from having been previously examined, they cannot be stopped by the Special Examiner if he finds them unfit for medicinal purposes, because, according to the rules of the Department, the officers of one port cannot go behind the returns of those of another.

Dr. Bailey suggests that the Colleges of Pharmacy should "suggest to the Department" all necessary reforms touching any modifications or alterations in the law, as well as the practical operation of that wise and beneficial sanitary measure, in the enactment of which they took and bore so prominent a part.

Dr. Bailey concludes his letter by giving assurance of his readiness to co-operate in any movement to perfect the measure, hopes that the perpetrators of "home adulterations" will be looked after and exposed, and begs to tender his best wishes for the advancement of Pharmaceutical Science to the members of the Association.—EDITOR AMER. JOUR. PHARM.]

T. B. Merrick, of New York, offered the following :

Resolved, That the Association adopt the report of the Committee on the Inspection of Drugs as in the main representing our views. After debate,

On motion, the further consideration of this was postponed until the afternoon session.

On motion of Prof. Procter, the report of the Committee on Secret or Quack Medicines was now taken up and discussed. The report was referred to the Committee on Pharmaceutical Education, and on motion the Recording Secretary was added to that Committee.

Moved, That when we adjourn it be till half past 3 o'clock this afternoon. Adopted.

C. Augustus Smith called up the 6th proposition in the Executive Committee's report relating to prizes, and spoke, in connection therewith, of the great importance of the subject of the cultivation of indigenous plants therein referred to, and moved that the whole subject of offering prizes be referred to a Special Committee to report next year.

The Chair appointed on this Committee, C. A. Smith, *Chairman*, S. M. Zachrisson, and T. H. Barr.

[Mr. Smith, in connection with the subject of indigenous drugs, stated that in the neighborhood of Cincinnati more than 2000 acres were devoted to the culture of grapes, yielding 400 gallons of wine per acre; that this branch of production was rapidly extending; and from reliable data he could state that in ten years the annual crop of argols (Tartar,) would be at least 150,000 lbs.—EDITOR AMER. JOUR. PHARM.]

A resolution in reference to the trade in quack medicines was offered by Dr. Guthrie.

Pending the discussion of this, the meeting adjourned.

#### AFTERNOON SESSION.

President in the Chair.

The minutes of the morning session were read and approved.

Dr. Guthrie having, since the adjournment, modified his resolution under discussion at that time, obtained leave to offer it in the following form :

Resolved, That this Association recommend to each State the enactment of such a law as shall require every person engaged in the manufacture and sale of any patent or secret medicine, designed or recommended for exhibition as a remedial agent, to file in the proper office of each State wherein such remedy is offered for sale, a full and complete formula of such remedy, and that under oath; and, moreover, to require such manufacturer so offering goods for sale or agency or otherwise, to conform to such State laws as regulate the levying of tax or excise upon all who engage in the business of buying and selling merchandize.

[In support of his resolution Dr. Guthrie said that no great object was attained without an early and zealous effort. If we would accomplish anything, we must aim high. He was aware, from the discussion this morning, that almost every individual present was opposed to the resolution; and, while respecting their opinions, he felt compelled, as a member of the Association, to speak out plainly. He felt the opposition of the brethren, yet he knew he had the good of the Association at heart. From a small beginning, quackery had grown to a great monster, of which we are afraid. Was this right? Putting aside pecuniary considerations, he thought very few would uphold the system. He wanted *right* to be placed above *money*. The American Medical Association were afraid to touch it; they have repeatedly given it the go-by. At their last meeting in New York, they made great preparations for an attack upon it; but at the first flourish of the enemy's trumpets, the whole army were put to flight. Shall we be afraid of it? In the name of humanity let us do something. Let us meet the question manfully, and not hide our light under a bushel.

Dr. Guthrie combatted the suggestion that the law would not reach it. Quackery was not independent of the law, but under its control. If this resolution should pass, and its consideration be pressed upon the Legislatures, there is little doubt such a law as that asked for could be passed in several States, perhaps during the coming winter, and of its good effect he could have no doubt. In reference to the argument that such a law as that proposed would deprive every owner of a quack medicine of the exclusive right to prepare and sell it, he quoted the case of Rogers vs. Rogers, tried in one of the Ohio Courts, in which the owner of a quack preparation sued another party of the same name for imitating his label, the decision of the Court sustained the right of the original proprietor of the medicine to his trade mark which was his label, and gave judgment against the imitator. He admitted the difficulties of the subject, but argued that all great movements must be sustained through opposition and reproach. He concluded with a review of the history of this Association from its origin, and made a stirring appeal to its members to falter not in the great work to which they are called.

He was followed by Mr. Parrish, who deprecated the expenditure of much time upon the subject. He regretted the disposition to turn our energies in the direction of legislation, instead of looking mainly toward self-improvement and the general elevation of our profession. He did not think public sentiment was prepared for the abolition of quackery, however legislatures might be induced to pass stringent laws against it. He urged that in this country no law was effectual which was not sustained by public sentiment, and instanced the liquor law of Massachusetts, which is violated in Boston with such impunity; also the law of the State of New York requiring that apothecaries in New York city should be graduates in pharmacy, while a very small proportion are such; also a law of Maine, somewhat similar to that called for by the resolution, which is understood to be unavailing as a means of suppressing quackery. He sympathized with the high toned views of Dr. Guthrie on this subject, and had no disposition to discourage a consistent opposition to quackery, but regarded the subject as a very delicate one, in view of the involved condition of pharmacy. He had been reminded during Dr. Guthrie's remarks of the Scripture account of

David, who did not seek a contest with the great Goliath, till in the capacity of a shepherd of his father's flocks he had slain the lion and the bear. So with this Association, let it not seek to meet this great giant until it has gained strength in contests with ignorance and incompetence in its own profession. Let it at least get out of its swaddling clothes before we thrust it forth to meet this enemy, which has grown wilful and strong by long and successful exertion.—  
EDITOR AM. JOUR. PHARM.]

After further discussion the following was offered by Joseph Laidley :

To strike out all after the word "Resolved," and insert, "That the American Pharmaceutical Association, believe that the use and sale of secret or quack medicines is wrong in principle and is in practice attended with injurious effects to both the profession and the public at large, and believe it to be the duty of every conscientious druggist to discourage their use.

"Resolved, That this Association earnestly recommend to our pharmaceutical brethren to discourage by every honorable means the use of these nostrums ; to refrain from recommending them to their customers ; not to use any means of bringing them into public notice ; not to manufacture or to have manufactured any medicine the composition of which is not made public ; and to use every opportunity of exposing the evils attending their use, and the false means which are employed to induce their consumption."

The question being divided, the motion to strike out all after "Resolved," was put by the Chair, and carried by a vote of 13 to 8.

The Resolutions being then put to vote were adopted by a vote of 13 to 5.

The subject of the Inspection of Drugs being now called up, the resolution offered by T. B. Merrick in the morning session, and postponed, was withdrawn.

H. F. Fish now offered the following :

Resolved, That in the opinion of this Association, all varieties of drugs that are good of their kind should be admitted by the Special Examiner.

This was discussed at length by Messrs. Merrick, Coggeshall, Guthrie, Fish, Geyer, Ellis, and Procter.

[The following notes of the discussion which occurred previously to the vote on the above resolution, are introduced because as the yeas and nays were called for and are recorded, the views on each side should be given in justice to the speakers. They are derived partly from the published notices of the discussion in the Boston Traveller, and partly from notes taken by the Editor of this Journal.

Mr. Merrick, of New York, commenced the debate by asking whether the Law for the Special Examination of drugs is a good one ? and urged the following objections to it : It is in conflict with the liberty we all ought to enjoy in business. The difference in the success of different druggists, depend mainly upon the reputation, good or bad, which they acquire by their knowledge, skill and probity in the selection and sale of drugs and medicines, or by the inferiority of their stocks of drugs, which results from a want of these qualities. He considered the tendency of this law was in good measure to deprive druggists of the advantages resulting from this competition. He regarded all laws of this kind to be checks to human progress. He further objected to the Drug Law on the ground that after a trial



of three or four years, it has not been found to work well. The office of Special Examiner is placed in the hands of persons unfitted by education and previous pursuits to execute so important a trust. He urged that physicians were less qualified than practical druggists for the station. They were not educated for that purpose. They often could not tell good from bad jalap. The office had become too political—a bad feature—and a good argument against the law. He reviewed the late instructions from the Treasury Department to the Special Examiners and pointed out its defects. He would rather trust to his eye-sight to tell the quality of many articles, such as aloes, senna, rhubarb, &c., than any estimate founded on the standards given. The specific gravity of the Essential oils is no criterion of their purity in a majority of cases. The idea that the value of Peruvian barks depended solely upon the amount of alkaloids they contain was combatted, and the doctrine maintained that all medicinal barks have their peculiar uses, and all should be allowed to enter our ports if *good of their kind*.

Mr. Colcord, of Boston, was pleased with many points in the report of the Committee, but was not prepared to adopt it as a whole. The resolution under consideration was embraced in the report, but he could not vote for it. In illustration he said that he liked mackerel if No. 1, and good of its kind, but he would as soon eat No. 3 mackerel as to vote for this resolution.

Mr. Fish, of Connecticut, observed that he also liked No. 1 mackerel, but he had eaten No. 3, and was willing to allow any one the same privilege, even though it might not be considered good of its kind. In reference to Cinchona bark he wished to say that during an experience of 26 years in the drug trade he had found Maracaibo bark to meet the wants of a great majority of the people in his section of the country. During the prevalence of the spotted fever as an epidemic in the valley of the Connecticut, in the years 1803, '4, and '12 and '13 the medical profession relied entirely upon that bark, and fought successfully that dire disease with it; and it was not until a later period that any of the official barks came into use, which were of course found preferable. That bark still holds its place, and forms nine-tenths of the consumption of the people, and is in a majority of cases preferred. He regarded a strict construction of the law, in the manner advocated by the opponents of this resolution, as an actual prohibition of many valuable remedies. Under it nitrate of potassa was inadmissible, as well as any bark non-official. He coincided with Mr. Merrick in his views regarding the law, and now desired to pursue such a course, as to render its operation less objectionable.

Mr. Fish believed the intent of the law was simply to exclude *adulterated or deteriorated* drugs, but was not applicable to any article in its natural state that possessed remedial powers. He conceived that the Examiners had assumed judicial powers, and undertaken to decide upon what should and what should not be admitted, without regard to quality, upon grounds wholly inapplicable, as had been illustrated recently in Philadelphia. He did not believe that a bark to possess remedial powers (as a febrifuge) should of necessity contain quinine.—The false Augustura (*Strychnos-pseudo quina*) was the most valuable antiperiodic known, but contained not a particle of that alkaloid. In conclusion, Mr. Fish regarded the present operation of the law as retrograding rather than advancing, and earnestly hoped that a more liberal spirit would finally prevail.

Dr. Guthrie replied to the arguments urged for the adoption of this clause of the report; reviewing the causes which led to the enactment of the law of 1818; giving a sketch of the state of the drug trade in the West and South before that law, and its present condition. He urged that the Association should take a high and consistent stand in this matter as having an important bearing on its future usefulness to the profession of Pharmacy in the United States, and upon the medical profession, as well as its importance to the community at large. He urged that the American Pharmaceutical Association stand as the representatives of the body of Pharmacutists and Druggists, and that these as curators and conservators of the public health are looked to by the community, that every article dispensed by them be not only "good of its kind," but that the kind be good, and not only good but the best. Medicines are at best hard to take, and we should offer such only as will produce the desired effect in the smallest amount.

Dr. Guthrie argued that the instructions of the Secretary of the Treasury were on this subject sufficient. He regretted that the executorship of the law should be made a political appointment, as it was calculated eventually to destroy the whole force and effect of the law, from the frequent changes of officers, the execution of whose duty requires great experience and a minute acquaintance with drugs in general;—and urged that the Association should protest against such changes unless called for by prominent and experienced druggists. Dr. Guthrie related many instances that had fallen under his observation while collecting information, as to the practical effects of this law, under the instructions of the late Secretary of the Treasury, Mr. Corwin, going to show the beneficial effects of the law, and gave it as his opinion that great good had resulted therefrom, not only in its immediate effects in keeping out of the market inferior drugs, but in begetting an inquiry and increasing demand for good drugs. He also urged the subject of home adulteration as having been greatly checked by the action of the law, and closed by an earnest appeal to his brethren of the Pharmaceutical profession to stand firm and unfaltering, on the clear ground of right, regardless of any outside pressure, come that pressure from what source it may.

Mr. Coggeshall said he would be glad to have a decision upon this vexed and tedious question—a decision now, by this body—that so far as its influence extends it may be settled at once and forever. This is the third time that this question has come before meetings of this kind, the Conventions of 1851 and '52, and now the Pharmaceutical Association;—it had twice been earnestly debated at much length, its claims each time fully and fairly considered, and it has twice been rejected by an emphatic vote. Is there consistency in bringing up this matter year by year in the very same words? There seemed a strange determination to force, if possible, a declaration by this body, of a principle as vague in its terms, as it would be mischievous in the latitude which would be claimed under it if adopted by authority. His colleague, Mr. Merrick, had said that there should be no obstruction to trade, that every man should be at liberty to sell good or bad articles as he thought proper; his ideas of what would best promote his success being his governing principle. He (Mr. Coggeshall) would not be so indulgent to any man who had no other principle in selling drugs than a pecuniary one—he would not allow a man to sell false and spurious drugs to the ignorant and unfortunate who might trust life, or hopes of restoration to health, upon their proper action—he would not allow false drugs to be trafficked in at all, and would not compromise with such iniquity.

In regard to the standards, he was very well satisfied with those contained in the instructions lately issued by the Secretary of the Treasury, as far as they go, and it is remarkable how well the ground is covered by them. The principal object of pressing this loose proposition appeared to be to remove obstructions to the influx of spurious (so called) Peruvian barks and European Rhubarb, if good of their kind, that is to say not worm-eaten, water-soaked, or decayed, but bright and of good appearance, though good for nothing as articles of medicine. He considered the present barks, or the great bulk of them, imported under the names Carthagena and Maracaibo, as altogether different from, and inferior to those of twenty-five and thirty years ago, when they were subjected to the examination reported in the foot note of the United States Dispensatory. As to Mr. Fish's argument that the people of Connecticut had used these barks and were satisfied with them, why, they used them because they didn't know any better, and he was astonished that his friend should live there and not teach them to be wiser.

Mr. Coggeshall regarded European Rhubarb as not a legitimate article of medicine, but as used wholly as an adulteration of Russian or Chinese, or as a substitute in whole or in part for them—the true article of Russian Rhubarb being literally unknown out of the principal cities. In illustration of this fact he mentioned having wanted some Turkey Rhubarb when in a town some hundred miles from New York, and called upon a druggist, who produced a large jar of what he remarked was "very handsome," but which was pronounced at once to be not genuine, to the surprise and no small indignation of the druggist, who among other arguments in defense of his drug, stated that he had bought it of a first class house in New York, and had paid \$2.25 per pound for it! Mr. Coggeshall be-

lieved from subsequent enquiry that this was too generally the case throughout the country.

Mr. Procter, of Philadelphia, took the ground that all legitimate medicinal substances good of their kind should be admitted, (defining the term *good* to mean the standard of quality adopted by general authority,) and that where articles were imported solely for purposes of adulteration, as has been alleged, their exclusion might be effected by special action of the proper authority and not left to the opinion of the Examiner. Much had been said about the worthlessness of the Cinchona barks from Northern South America. However true this character may have been formerly, or even now in regard to some varieties of that kind of barks, it is an ascertained fact that since the monopoly of Bolivian Cinchona the agents of merchants and manufacturers in Europe had searched the New Grenadian Andes and had discovered other varieties of Cinchona bark of such superior quality as to render them profitable for the manufacture of sulphate of quinia. Quite recently bark of this kind was refused admittance because it it was not official! He had seen some of these barks in Philadelphia, that had yielded from one and a half to nearly three per cent of crystallized sulphate of quinia; their appearance sometimes was by no means in their favor, often much broken up, and so as to readily give an idea of inferiority, whilst in other cases they were in handsome pieces. Now, adopting the standard of the late Treasury circular, (viz: 1 per cent of quinia or two per cent of alkaloids) these barks are not only good, but very good varieties of their kind, and should be as they now are admitted, whilst the inferior varieties of these barks, and other barks falsely sold as Cinchona, should be excluded.

In relation to Banbury Rhubarb, which is certainly the best variety of the European kind, if, as has been so positively asserted by Mr. Coggeshall, it is solely used in this country for adulteration or as a sophistication, let it be excluded, because as yet no legitimate demand for it has been made by physicians—they do not know it—and the supply of both kinds of Asiatic Rhubarb, which is more active, and better understood, is ample. If, however, a legitimate demand for this or any other article peculiar to Europe should arise, from the influx of European practitioners, they certainly should be allowed to pass the Custom House if good of their kind, even if they are sometimes used for purposes of adulteration.

Previous to taking the final vote, Mr. Procter remarked, that last year he had voted against a resolution similar to that now before the meeting, but that since then he had had occasion to investigate the subject in its various bearings, and was convinced that it was the true ground to act upon in admitting all legitimate medicinal substances.

Mr. Ellis availed himself of the opportunity, before taking the vote, of making some remarks upon the subject before the Association—as the debate had already taken a wide range, and remarks had been made that might lead to the impression that there existed a disposition on the part of many members of the body to relax in some degree their efforts to sustain the law of Congress in relation to imported drugs. Such, he felt satisfied, was not the case—all were aiming at the same object—to use our utmost endeavors to discountenance the use of inferior and sophisticated drugs.

It was due to himself and his friends who might vote for the resolution authorizing the introduction of all drugs that were good, or superior, of their kind, to disclaim all idea of diminishing the conservative features of the law. A great deal had been said against the introduction of a class of barks from the Atlantic coast of South America. These barks, it was well-known, contained appreciable quantities of the Cinchona alkaloids, and sufficient quinia to make it an object to manufacture the sulphate from them. He would state for the information of the Association that a lot of sulphate of quinia recently imported into Philadelphia, had been rejected on the ground of its not being manufactured from Calisaya bark. It was from the highly respectable house of Howards & Kent, near London, and he had understood that these gentlemen were mortified to hear that sulphate of quinia manufactured by them, had been refused admittance into an American Port. They admit, of course, that they use Bogota and Maracaibo



barks in their manufacture of this important article, but because they use these barks, to the admission of which so much opposition has been manifested at some of our ports of entry, it does not follow that their quinia would be less pure or efficient as a remedial agent than if made from yellow bark.

The facts of the case appear to be—that in the use of calisaya bark less time is consumed and the product is larger;—the cheaper barks require a more tedious process to elaborate what quinia they contain, and are not used when the manufacturers are pressed for time. In the instance of the particular invoice of quinine alluded to, it was understood from the manufacturers to have been made from the first quality of the official bark:—a statement corroborated by two separate analyses, showing the salt to be pure sulphate of quinine.

It must be apparent from the immense and increasing demand for this valuable remedy, that other sources of supply of bark must be sought besides the western coast of South America, or the price of the salt would limit its consumption.

Mr. Ellis considered, therefore, in voting for the passage of this resolution, and thus declaring as the sense of this Association that “medicines good of their kind should be admitted,” we are but carrying out the views of the recent Treasury circular on this point.

Pending this discussion the Committee on Credentials introduced for membership the names of Geo. S. Dearborn, Great Falls, N. Hampshire; and James S. Melvin, Henry D. Fowle, Peter J. Hazzard, W. W. Goodwin, of Boston, Massachusetts.

The following being present signed the Constitution and paid the fee, Geo. L. Dearborn, James S. Melvin, and Henry D. Fowle.

On motion the vote on the resolution was directed to be taken by yeas and nays, and was as follows:

YEAS.—Cummings, Dearborn, Brewer, Fish, Merrick, Ellis, Parrish, Procter, Duval, Zachrisson, Barr.—11.

NAYS.—Peck, Henchman, Restieaux, Colcord, Turner, Lincoln, Souther, Geyer, Dupuy, Coggeshall, Laidley, Smith, Chapman, Guthrie, Melvin, Fowle.—16.

On motion, Thomas Hollis, of Boston, was excused from voting.

On motion, adjourned till half past 9 o'clock to-morrow morning.

### THIRD-DAY.—MORNING SESSION.

The President in the Chair.

The minutes of the last session were read and approved.

The subject under consideration at the time of adjournment being resumed, the following resolution was offered by the Secretary:

Resolved, that the two lists of *Materia Medica* and preparations, prepared by the Committee [on the Inspection of Drugs,] and presented in their report, with a view to classifying them and fixing standards upon those which are capable of it, together with the subject of the appropriate tests for detecting adulterations when practicable, be referred to a special committee to report next year.

Prof. Procter proposed the following amendment, which was accepted by the mover: to add after the word “committee”—the words “who shall be authorized to invite the co-operation of the several Colleges of Pharmacy.”

The Resolution as amended was then adopted. The number of the Committee was fixed at 2, and Wm. Procter, Jr., and G. D. Coggeshall were appointed by vote of the Association.

C. B. Guthrie moved to refer the remaining part of the report on the Inspection of Drugs, to the Committee just appointed, which was, after discussion, withdrawn.

H. F. Fish proposed the following :

Resolved, That the late Circular of Instructions, from the treasury department, is in our opinion a useful one, although, in many of its provisions defective, and, as regards many articles, calculated to substitute ineffectual modes of determining quality for a sound and intelligent judgment founded on their physical characters, and that this circular be referred to the Committee appointed on the list reported by the Committee.

C. B. Guthrie proposed to strike out all after "department" and add—"be referred to the Committee of Two, just appointed to be reported upon, with such amendments as they deem requisite, at our next annual meeting."

The amendment and resolution as amended were adopted.

The following resolution, [embodying an opinion of the Committee on the Inspection of Drugs,] was offered, and after much discussion decided negatively :

Resolved, That we believe the Drug Law was never designed to exclude foreign secret or quack medicines through the Custom House, nor do we believe this justifiable however *desirable*.

The following resolution offered by William B. Chapman of Cincinnati, was adopted :

Resolved, That the next annual session of this Association be held in Cincinnati, Ohio, at such time as may be fixed upon by the Association.

Charles T. Carney, of Lowell, Mass., being recommended by the Committee on Credentials, complied with the rules, and was constituted a member.

Professor Procter offered the following which was unanimously adopted.

Resolved, That this Association have heard, with unfeigned regret, of the death of Jonathan Pereira, M. D., of London; and, as one of the most distinguished and able Pharmacologists of his age, we esteem his death a serious loss to the cause of Pharmaceutical and Medical Science.

Jos. Laidley offered a resolution, which was amended with his consent so as to read :

Resolved, That the next annual meeting of this Association shall be held on the last Tuesday in July, 1854, at 11 o'clock, A. M.

It was unanimously adopted.

Wm. W. Goodwin, and Peter J. Hazzard, were now constituted

members by signing the Constitution and paying the annual contribution.

The Committee on Credentials reported for membership J. B. Lane, of Fitchburg, and A. S. Jones, of Newburyport, Mass., and they also being present, complied with the requirements of the Constitution.

Joseph Laidley offered the following:

Resolved, That a Committee of three be appointed to consider the feasibility of forming a benevolent fund for the relief of such members of this Association as may need its aid; and if they consider it feasible, that they recommend such means for raising, and rules for governing, the proposed fund, as they may deem suitable, and report to the next annual meeting.

A motion to lay on the table was decided in the negative, and the resolution was lost.

The Report of the Committee on the Sale of Poisons, being now taken up, the recommendations of the Committee were embodied in the form of resolutions by its Chairman. A motion was made to lay them on the table, and lost. They were discussed by several members.

An amendment proposed by C. A. Smith, to substitute the word *arsenic* for *popular poisons*, was adopted.

Thomas Restieaux, of Boston, moved they be indefinitely postponed. It was not agreed to.

The question on the resolutions being taken, they were adopted, as follows:

Resolved, That this Association, in view of the loose manner in which the sale of arsenic is conducted in this country, earnestly recommend to the pharmaceutical bodies, where these exist, and to druggists and pharmacists in general in other places, that the several Legislatures in those States where no law on the subject exists, be petitioned to pass laws confining the sale of this poison to apothecaries, druggists, and physicians, or to such other persons as shall be specially licensed by law, who shall be required to keep a record of such sales. That such sales shall not be made to minors or servants unless they be properly authorized by a written order from a responsible person. That all packages or bottles shall be distinctly labelled with the name of the poison, and the word POISON prominently marked on it; and finally, that any sale of arsenic followed by accident, in which these precautions have been neglected, be considered a misdemeanor punishable by legal process."

C. B. Guthrie offered the following, which was adopted:

Resolved, That the Executive Committee be requested to publish and circulate a circular address to druggists and apothecaries, announcing the time of our next meeting, the objects of the Asso-



ciation, terms of membership, and such other information as they deem requisite to ensure a full attendance upon its sittings.

Thomas Farrington was now constituted a member, by signing the Constitution, his contribution having been previously paid.

The following communication was introduced by the Corresponding Secretary of last year, and, on motion of C. B. Guthrie, referred to the present Corresponding Secretary to reply thereto.

*To Prof. William Procter, Jr., Corresponding Secretary, &c.*

DEAR SIR: At the third annual meeting of the Illinois State Medical Society, held at Chicago, June 7th to 10th, 1853, the undersigned was appointed a Committee to transmit to the National Pharmaceutical Convention the following resolutions reported by the Committee on Drugs and Medicines, and unanimously adopted by the Society.

Resolved, That the Illinois State Medical Society have learned with much pleasure of the institution of the National Pharmaceutical Society, and would hereby express a desire and intention, as far as may be, to co-operate with the laudable exertions of that body in "the advancement of pharmaceutical knowledge, and the elevation of the professional character of apothecaries and druggists in the United States."

Resolved, That this Society earnestly recommend to the druggists and apothecaries in Illinois, that, as far as circumstances will admit, they form among themselves pharmaceutical societies to enable them to act in the most efficient manner as adjuvants to the National Pharmaceutical Association, in the work of elevation and reform of their profession.

Resolved, That this Society adopt cordially the following two "resolutions" of the National Pharmaceutical Convention, held at Philadelphia, October 6th, 1852, viz: "Resolved, That in the opinion of this Convention, the law against the importation of adulterated drugs, chemicals, and medicinal preparations has already effected much good by excluding large quantities of inferior drugs from the market. Resolved, That, inasmuch as the usefulness of the law will be proportional to the ability and conscientious discharge of duty in Examiners, that this convention shall respectfully and earnestly represent to the appointing power the cardinal importance of preventing the removal of qualified Examiners on mere political grounds."

Resolved, That a Committee of one be appointed by the chair to correspond with the National Pharmaceutical Association, and co-operate with that body in carrying into effect the spirit of the last quoted resolution.

The undersigned was appointed the Committee under the last resolution, and would respectfully express his readiness to co-operate with the Association in any manner they may suggest as most expedient to effect the object referred to. Please present the above to the Association, if it should reach you in time, and believe me

Yours very truly,

[Signed]

JAMES V. Z. BLANEY.

Vice President George D. Coggeshall in the chair.

The following resolution was offered by H. T. Cummings:

Resolved, That the Executive Committee be instructed to publish a large edition of the proceedings of this Convention, including the reports and all the accompanying documents; distribute it extensively over the country at the expense of the Association, and file in

the hands of each of the Colleges and Associations here represented a sufficient number of copies for preservation and future use.

This was put to vote, and lost.

A motion was made directing it to be left to the discretion of the Executive Committee, what papers introduced in connection with the proceedings shall be published. This was lost.

It was on motion resolved to take up the various reports and documents on file, with a view to determine whether they shall or shall not be published.

The report of the Executive Committee was on motion referred for publication. The statistical reports introduced by that Committee were referred to the Executive Committee of this year to publish so much as may seem to them best.

A motion that the report of the Committee on the Inspection of Drugs, without the list accompanying it, should be referred for publication, was lost.

On motion it was Resolved, that so much of Dr. Bailey's letter as relates to statistical information with regard to the importation of drugs, be published.

On motion it was Resolved, that Dr. James V. Z. Blaney's letter be published.

On motion, the report on the Sale of Poisons was referred for publication.

On motion it was Resolved, that the samples of medicinal herbs of home growth, prepared for the Massachusetts College of Pharmacy, and by them exhibited to this Association, indicates an improvement in the preparation of this class of medicines, highly commendable.

[The specimens alluded to in this resolution, were grown and dried by Mr. T. S. Atherton, of the United Society of Harvard, Massachusetts. The leaves, such as digitalis, henbane, etc., were deprived of the cruder parts, broken up, and enclosed in corked quart bottles, without being pressed in cakes. This plan of getting up medicinal plants, especially those of an odorous or fugitive character, is very commendable, and when well done will render them much less changeable by keeping.—EDITOR AM. JOUR. PH.]

The President resumed the chair.

The following was offered by C. A. Smith, and unanimously adopted:

Resolved, That our Committee on Pharmaceutical Education be requested to report at our next annual meeting on the expediency of endeavoring to obtain such Congressional action as would compel all Special Examiners of drugs and medicines to be either graduates of pharmacy, or to receive a certificate of qualification for such office from some College of Pharmacy recognised as such by this Association.

A letter received through George D. Coggeshall from John Meakim, of New York, on the subject of local formulæ, was read; and

on motion of Joseph Laidley, the following resolution in relation thereto was adopted :

Resolved, That the letter of Mr. Meakim, in reference to securing uniformity in the preparation of unofficial compounds be referred to the Executive Committee, with instructions to request the forwarding to them of such local formulæ as pharmacutists may wish to communicate.

[It may be stated in explanation of this resolution, that Mr. Meakim's proposition has reference to those extemporaneous formulæ, and perhaps some permanent preparations, which are more especially known and prescribed in certain localities than in others, and which when prescribed in other places by stranger physicians, are either not understood or liable to be misinterpreted. The object of the resolution is to collect these through the agency of the Executive Committee, have them digested into a formulary, and published either in the Proceedings, the Journals, or in some other way.—EDITOR.]

H. F. Fish moved the following, which was unanimously adopted :

Resolved, That the thanks of the Association be presented to the President and Secretary, for the able and impartial manner in which they have discharged the duties of their offices.

Professor Procter moved the following which was unanimously adopted :

Resolved, That those members of the Association who are strangers in Boston, do express their warm sense of the kindness and courteous treatment they have received from the members of the Massachusetts College of Pharmacy.

On motion, it was voted that the Recording Secretary be instructed to have the book containing the Constitution and Code of Ethics, and the signatures thereto, enlarged, fully bound, and lettered.

The following gentlemen were elected Correspondents agreeably to *section 2, article 6*, of the Constitution, for one year, viz :

## MAINE.

S. W. Blanchard, M.D., Yarmouth,  
Frederick Robie, M.D., Biddeford,  
S. R. Byram, Eastport.

## NEW HAMPSHIRE.

Geo. L. Dearborn, Great Falls.

## NEW YORK.

A. J. Mathews, Buffalo,  
Wm. Bristol, Utica.

## NEW JERSEY.

Wm. J. Allinson, Burlington,  
P. V. Coppuck, Mount Holly,  
J. D. James, Trenton.

## DISTRICT OF COLUMBIA.

Dr. R. S. Patterson, Washington.

## NORTH CAROLINA.

S. J. Hinsdale, Fayette.

## SOUTH CAROLINA.

W. L. Cleveland, Charleston.

## PENNSYLVANIA.

L. Wilcox, Jr., Pittsburg,  
Wm. G. Baker, Lancaster,  
F. R. Smith, M. D., Bellefonte,  
H. P. Swartz, Alleghany City.

## MARYLAND.

A. J. Lowndes, Baltimore.

## VIRGINIA.

Jas. B. Campbell, Portsmouth,  
James Baker, Wheeling,  
R. H. Stabler, M.D., Alexandria,  
Jas. Cooke, M.D., Fredericksburg,  
C. A. Santos, Norfolk.

## LOUISIANA.

J. H. Tilghman, New Orleans.  
A. E. Richards, Plaquemin.

## TENNESSEE.

Dr. R. O. Currey, Nashville,  
Mr. Strong, Knoxville.



## GEORGIA.

R. Battey, Rome,  
W. W. Lincoln, Savannah,  
D. B. Plumb, Augusta.

## FLORIDA.

E. Barnard, Jr., Tallahassee.

## ALABAMA.

Mr. Gates, Mobile,  
Mr. Theiss, Montgomery.

## MISSISSIPPI.

Dr. Emanuel, Vicksburg,  
C. A. Moore, Jackson.

## KENTUCKY.

George R. Miller, Louisville,  
J. Morton Morris, Louisville,  
Mr. Barkers, Georgetown.

## MISSOURI.

G. T. Chamberlain, St. Louis.

## ILLINOIS.

Mr. Reed, Chicago.

## INDIANA.

Robert Browning, Indianapolis,  
John T. Plummer, M.D., Richmond,  
John T. Wall, M.D., Terre Haute.

## CALIFORNIA.

G. L. Simmons, Sacramento.

On motion of T. Restieaux, the vote approving the minutes of yesterday was reconsidered, and the Secretary allowed to make an alteration in the minutes of the morning session, which alteration was adopted.

The entire minutes were finally read, and by vote adopted.

The Convention, at about 3 o'clock, finally adjourned to meet in Cincinnati, Ohio, on the last Tuesday in July, 1854, at 11 o'clock A. M.

(Signed)

EDWARD PARRISH,

Recording Secretary.

[NOTE.—It is proper to state that the notice of Mr. Taylor's Report on drug inspection, of Dr. Bailey's letter, and of the discussions on the report on quack medicines, and on the drug law, have been introduced here, solely on the Editor's authority, the Association not being responsible. The Editor has made these additions to render the minutes more intelligible as regards the action of the Association on the Report of Mr. Taylor, and to exhibit a few of the reasons given by the speakers. The notes taken during the debates, embrace only a part, and the exact language of the speakers has not been strictly adhered to, yet the ideas and general expression we believe is retained. The documents referred to in the Executive Committee's report at page 5 are not now published; a part of them may be in a future number. An apology may be looked for from our readers for the great extent of this notice. Our only reasons are that this is the last number of the volume, and that a full notice of the meetings should be permanently recorded.—EDITOR AMER. JOUR. PHARM.]

## EXPERIMENTS WITH SULPHINDIGOTIC ACID, AND OZONOUS ATMOSPHERES.

By DR. JOHN T. PLUMMER, Richmond, Indiana.

Since my communication to this journal on the *decolorizing properties of the essential oils*, &c., I have made the following observations and experiments:

1. A small quantity of *rancid lard* heated, but not boiled, with solution of sulphindigotic acid, readily discharges all color from the liquid.

2. Some paper was prepared with a solution of iodide of potassium in starch water, and a slip of it suspended in the *atmosphere* of a nearly empty jar of *rancid lard*. In a short time the iodine began to be eliminated, and the paper ultimately became black.

4. Another slip of the prepared paper was inserted into a bottle from which had been emptied a small quantity of *oil of amber*; in this case also the *atmosphere* in the vessel blackened the paper.

4. An *atmosphere* of *oil of lemons* and other *essential oils* likewise decomposed the iodide of potassium, and rendered the paper black.

5. An eight ounce glass jar, with a thin stratum of water in it, and a few bits of phosphorus half-covered with the water, and a strip of the iodized paper suspended in it, with another slip of blue litmus paper by its side, was left with only a glass plate over it, until all the white clouds of phosphorus acid were absorbed by the water below, and the air in the jar left perfectly clear. During the formation of the phosphorous acid no change took place in the color of the moistened litmus paper, nor the moistened iodized paper. When, however, the phosphorous acid was absorbed as mentioned, the litmus paper became slowly bleached, and the iodized paper blackened.

So indisposed was the ozonized atmosphere to escape, that I lifted off the glass plate and inserted a fresh strip of iodized paper into the jar, and the paper was instantly blackened. I again removed the lid, and lowered a bit of lighted candle into the jar; the flame was immediately extinguished, and every vestige of ignition in the wick was gone.

6. Neither the confined *atmosphere* of *tincture of assafetida*, nor of *tincture of galbanum* affects the iodized paper, even after thirty hours exposure. The atmosphere of the gum resins themselves produced no discoloration of the paper.

7. *Tincture of galbanum*, shaken up with the indigo solution, readily bleached it. *Tincture of assafetida*, unlike the tincture of galbanum, instead of making a durable milky mixture, speedily parted with its gum resin, in such a manner as to leave the liquid almost entirely transparent, but of a pale blue color. Exposure to the direct rays of sun-light, for less than one hour, wholly bleached the fluid and rendered it completely limpid, the precipitated gum-resin floating on the top and adhering to the sides of the test tube.

Crumbs of the gum resin boiled with the indigo solution yielded a pale blue milky mixture, which by exposure to the sun's rays soon became white, but remained milky.

8. It is stated in the U. S. Dispensatory that tincture of galbanum becomes milky on the addition of water, but yields no precipitate. This is true for a certain length of time, but after fifteen or twenty hours a perceptible deposit is apparent. The action of the indigo solution was much more obvious in this way, for in an hour after the addition there was a well defined precipitate, which left the liquid semi-transparent.

9. I boiled some crumbs of galbanum in water, in a Florence flask, until the peculiar odor of the gum resin was diffused through the laboratory and adjoining rooms. The mouth of the flask was loosely corked, and during the whole of the ebullition a strip of iodized paper was kept suspended in the vessel. No discoloration of the paper appeared even after an hour's exposure to the vapor, nor in twenty-eight hours after cooling.

10. Slips of iodized paper were suspended in the bottles containing more or less of the following oils, and other substances. The times at which decomposition of the iodide took place are attached to the respective oils:

Oil of Lemon, blue in five minutes, black in ten minutes.

Oil of Cinnamon, slightly colored in four minutes, blue in twelve minutes.

Oil of Lavender, pale red in ten minutes.

Oil of Fir, Turpentine, Tansey, and Cubebs, slightly brown in ten minutes.

Oil of Amber and Rosemary, light purple in fifteen minutes.

Oil of Croton, pink in 23 minutes.

Oil of Peppermint, light brown in twenty-five minutes.

Oil of Savine, slight tinge in thirty minutes.

Oil of Caraway, Wintergreen, Sassafras, Fennel, Cloves, Spearmint, Bergamot, and Wormseed, (Baltimore)—no change in an hour, but after two to thirteen hours the paper was colored in the sassafras, wormseed, &c., bottles.

Tincture of Castor, and Camphor—no effect.

11. A broad slip of paper was prepared with the solution of iodide of potassium in starch, thoroughly dried, and the names of various volatile and fixed oils, and some tinctures, written on it,



at some distance from each other. Opposite these names the respective liquids were applied, by letting a drop fall upon the appropriate spot.

The periods at which the iodine was eliminated, as determined by the earliest discoloration of the paper, were as follows:

Oil of Lemons, two seconds.

Oil of Tansey, half a minute.

Oil of Turpentine and Juniper, three-fourths of a minute.

Oil of Wintergreen, Sassafras, Bergamot, and Anise, one minute.

Oil of Croton, one and a quarter minutes.

Oil of Origanum, tincture of Galbanum, and Assafetida, one and a half minutes.

Oil of Amber, Peppermint, Fennel, Lavender, and Caraway, two minutes.

Oil of Spearmint, three minutes.

Oil of Cinnamon, four minutes.

During this experiment an interesting result developed itself. *Every liquid applied to the paper produced so peculiar a shade of brown as to be quite characteristic.* Oil of cinnamon yielded a lemon-brown, with a darker margin; oil of fennel a uniform scorched-paper brown, with no difference at the margin. Other oils produced a very dark brown, and some a very pale brown color, yet all differed from each other, either by reflected or transmitted light, or in the character of the margins. Tincture of galbanum gave a pale violet tinge to the light brown base, with a much darker border; tincture of assafetida yielded a strikingly different spot from this.

On a review of the foregoing experiments, it will be perceived that, according to experiments 6, 9, 10,

1. All the odorous substances do not produce active ozonous atmospheres. That

2. Oil of sassafras and oil of wintergreen, which, according to my former communication already referred to, very tardily discharged the color of sulphindigotic acid; and, according to experiment 10 in the present paper, made no impression upon the iodized slips, when these were exposed to their atmospheres, were among the most active agents (exp. 11) in decomposing the iodide, when applied in substance to the prepared paper. That

3. The oils whose atmospheres do act upon the iodized paper, act with widely different degrees of facility, (Exp. 6, 9, and 10.)

4. Oil of lemon transcends all the other oils for promptitude of action, whether on sulphindigotic acid, or on the prepared paper, by atmosphere or by contact.

5. Oil of cinnamon acts with equal ease by its atmosphere as by contact; oil of lemon sixty times more slowly by its atmosphere than by contact; oil of lavender five times more slowly; oil of turpentine thirteen times; of amber seven times; of croton nineteen times; of peppermint twelve times; others from 30 to 120 and more times more slowly by their atmospheric than by contact agency.

6 The atmospheres in the bottles are not pure ozonous atmospheres, but are modified by the odoriferous portions of the oils.

7. The color of the stains produced on the paper by the atmospheres of the oils, and by the oils themselves, are so similar in several cases, as to lead to the conclusion that the volatile oils themselves are the sole agents in both cases, the vapors of the oils being condensed upon the paper in the case of the atmospheres.

I have used the term *ozonous* in the preceding pages more in reference to the suggestion of the editor of this journal, in a note to my previous communication, and for its temporary convenience, than from any satisfactory evidence that I have been able to verify the conjecture. It is true, there is much in the experiments to tempt one to the conclusion that ozone was the immediate cause of the several effects corresponding with the action of that body; but when we consider that other substances, which we admit act by their own specific powers, produce like effects in like relations, it renders the correctness of the conjecture rather problematical.

Thus No. 5 acts upon the prepared paper, and upon solution of sulphindigotic acid, as the oils do; both its vapor and its liquid decompose the iodide, and bleach the indigo solution. Why may we not attribute the like effects of the essential oils to a *peculiar* action of each? There are various experiments by which, perhaps, the question might be decided; such, for instance, as washing an atmosphere of some of the oils, or otherwise removing the influence of every agency beside ozone, (if it exist) and then testing; but I have not had time to prosecute the enquiry beyond what I have already recorded.

## EXTRACT OF CAPSICUM.

By W. C. BAKES.

At the request of a physician of this city, I have been induced to prepare the above extract. Although the Pharmacopœia recognises the Infusum Capsici, and also the Tinctura Capsici, yet it is not always convenient to administer a medicine in the form of a liquid; therefore an extract was thought of, as being perhaps the most convenient to the medical profession. After some experiments. I have found the following formula the most satisfactory:

Take of Powdered Capsicum,	8 ounces.
Dilute Alcohol,	1½ pint.

Moisten the capsicum with a sufficient quantity of the dilute alcohol, and set the mixture aside in a close vessel, to macerate, for six days; then place it in a percolator and pour dilute alcohol on it until four pints have been obtained; and evaporate by means of a water bath to the consistence of an extract. I have found eight ounces of the powder to yield two ounces of extract. It is very powerful; and when a small quantity is placed on the tongue, it produces an insupportable burning sensation immediately; and, if left too long, will act as an epispastic. It has been used with success combined with quinine, in cases of intermittent fever, occasioned by the too frequent use of ardent spirits. An ointment made in the following manner:

Take of Extract Capsicum,	1 drachm,
Simple Cerate,	1 ounce,

was found to act as a rubefacient in less than twenty minutes. It may be used with success where a simple rubefacient is required.

## SPONTANEOUS GENERATION OF PRUSSIC ACID IN A MEDICAL COMPOUND.

By JOHN T. PLUMMER, M. D., of Richmond, Indiana.

I do not know that the attention of the medical profession has heretofore been called to the fact that alkaline combinations with organic matters, at least sometimes generate *hydrocyanic acid*.



Nor did it present itself to my own mind until recently. I think it should claim the notice of those who are interested in the treatment of disease, as well as of those who are engaged in pharmaceutical chemistry.

The short train of events leading to the development of this fact was as follows :

A young physician applied to me on account of an attack of sickness the day before, for which he could assign no satisfactory reason. He said that while he was engaged in reading, he suddenly became unconscious, and remained so for half an hour, according to the statement of his wife. After he revived sufficiently to walk about, he said he felt half bewildered, and found that his powers of recollection were greatly impaired, if, indeed, they were not sometimes entirely gone.

He could not attribute it to anything inhibited, unless it was a preparation of carbonate of potash and tincture of hyoscyamus which a distinguished Eastern physician had prescribed for him, and which he had repeatedly taken before, without any ill effect.

As the patient belonged to the class of dyspeptics, I was at first inclined to attribute his attack to some ordinary gastric derangement displaying itself upon the nervous system ; but on further reflection and consultation with him, I learned that the preparation of which he took the dose in question, (a teaspoonful,) was one that he had made some time before and laid aside.

This consideration induced me to make a chemical examination of the contents of the vial. At the bottom of the vessel there was a copious, pure white, delicate deposit ; the supernatant fluid was clear, and had a suspicious odor, which led me to test for prussic acid. There was a perceptible fermentation going on in the liquid.

The white sediment was collected on a filter, washed and subjected to the action of acids, and also to the red heat of a platinum spoon. But none of these agents produced any sensible impression upon it. I then exposed it to the heat of a blow-pipe flame, with carbonate of soda, and obtained, what I anticipated,—silicate of soda. The *silica* was probably derived as an impurity from the carbonate of potash, which entered into the composition of the medicine.

The filtrate was received into a wide-mouthed vial ; and the

mouth covered with a slip of glass moistened on the under side with nitrate of silver in solution. In a short time, the solution was observed to become opake and white. This white film was treated with  $\text{NO}_5$ , without effect; but cyanide of potassium immediately dissolved it.

The mouth of the vial was now covered with another piece of glass moistened with  $\text{NH}_4 \text{ S}$ ,  $\text{HS}$ . After some minutes the glass was removed, and the moisture, now milky, gently evaporated. To the dried residue a solution of a persulphate of iron was applied by means of a glass rod drawn over the surface. The Modena red streaks which appeared, confirmed the former results with  $\text{Ag NO}_5$ , and left no doubt of the presence of *hydrocyanic acid*.

As further evidence, however, of the existence of  $\text{HCy}$  in the fluid, I added to the filtrate, (about ounce of it,) solution of  $\text{Ag NO}_5$ , till all precipitation ceased. The precipitate was collected and washed; and  $\text{NO}_5$  added. By this means the carbonate of silver, &c. were removed. The undissolved residue was washed, and was found to be soluble in cyanide of potassium; and to be decomposed by  $\text{HCl}$  with liberation of the prussic acid odor.

This was the extent of my analysis. The reader must judge for himself whether I found sufficient cause for the alarming symptoms manifested by the patient. He took no more of the medicine. More than a month has elapsed since the attack, and there has been no return of the symptoms.

Judging from the presence of  $\text{HCy}$  in the fumes over the soap kettle, and in the odor of *crude* potash, I suspect it will be found, that with moisture, potash and carbonate of potash by their reaction on organic matter, generally generate this dangerous remedial agent.

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## SYRUP OF LACTUCARIUM.

BY THOMAS S. WIEGAND.

The importance of Lactucarium as an article of the *Materia Medica*, has long been acknowledged by many of the most authoritative writers upon medicine, being regarded by them as particularly suitable to the case of those whose idiosyncrasy forbids the employment of opium, or any of the opiate products.

From the experiments of M. Emile Mouchon, detailed in the

18th vol. of the American Journal of Pharmacy, page 32, which from the care bestowed upon the subject, seems to be entitled to great respect, ethereal and alcoholic menstrea appear to be inappropriate to the extraction of the active principles of the drug, and even were either of those solvents suitable to the exhaustion of the material, our own experience would forbid us adopting them in a satisfactory method of making a preparation which should contain in a moderate bulk an adequate dose of the remedy, and yet be free from alcoholic stimulus so undesirable in anodyne preparations.

The formula for a syrup given by M. Mouchon, while it affords a preparation which represents the medicine very completely, leaves it so weak as to be quite objectionable.

A formula which seems to answer the conditions above mentioned, is offered, in the hope that a remedy so deservedly esteemed may be more generally employed.

Take of English Lactucarium in coarse powder,	grs. 64
Carbonate of Potash,	grs. 32
Distilled water, sufficient,	
Sugar,	oz. 4

Grind the Lactucarium with carbonate of potash, and continue the trituration till the two are thoroughly mixed, add sufficient water to moisten it completely, allow it to stand for twelve hours, and displace slowly till two fluid ounces are obtained, then add the sugar and dissolve with a gentle heat.

Each fluid drachm of this syrup contains two grains of lactucarium.

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## NEW TEST FOR QUININE.

By A. VOGEL.

Some time since I made known a new reaction on sulphate of quinine, which consisted in this, that a solution of sulphate of quinine, mixed with chlorine water, assumed a dark red coloration upon the addition of a concentrated solution of ferrocyanide of potassium. Recently, Fresenius has asserted that this reaction is not established. This was to me surprising, as I have repeatedly exhibited this reaction in my lectures, and have had much practical experience with it without once miscarrying. Al-



though, consequently, convinced of the correctness of my observation, I have, nevertheless, again undertaken the subject, to be able to learn the relations which have caused the failures in other hands. Believing that error lay in the quinine itself, I have examined several kinds of quinine derived from various sources, and obtained the reaction with all; the failure of the reaction must, therefore, be sought for in the method. By a series of researches it has been shown that, as was expected, the prevention of success is caused by the constitution of the reagents, the chlorine water, and the ferrocyanide of potassium. The chlorine water must be necessarily concentrated, freshly prepared and free from muriatic acid. If the solution of ferrocyanide of potassium is not concentrated by solution in the heat, the red coloration appears later, but can be obtained directly, and also with a diluted solution of ferrocyanide of potassium, upon the addition of a few drops of ammonia; the failure also depends upon the quantities of the reagents. Only a proportionately small quantity of the chlorine water must be taken; on the contrary, a large excess of the solution of ferrocyanide of potassium, if it be desirable not to add a little ammonia. I have further remarked that an aqueous solution of sulphate of quinine is to be preferred to a spirituous one, because the spirituous, when not sufficient chlorine water is present, precipitates the concentrated solution of ferrocyanide of potassium, and the establishment of red coloration is thereby rendered difficult. It needs be scarcely mentioned that the reagents must be applied in the prescribed order, as in any other way no reaction appears.

I now give the following method by which this reaction can be obtained, under all circumstances, by the most inexperienced. Sulphate of quinine is introduced into a test tube, and water poured on it, so that the greater part of the crystals remain undissolved. Some drops of this fluid, which is shaken to regain the sulphate of quinine on suspension, are poured into a watch glass, and so much chlorine water added that a clear, somewhat yellowish, solution results. The quantity of chlorine water applied depends upon its concentration, and upon the quantity of quinine salt. When into this chlorinated quinine solution finely pulverized ferrocyanide of potassium is introduced, it acquires a bright rose red color. The rose red color passes over soon, and particularly rapidly, if still more of the pulverized ferrocyanide

be added, into a deep dark red. By this method the failure of this reaction is entirely removed, and the research may be in such way quite as easily and certainly conducted as the well-known reactions on strychnine with chromic acid, or with peroxide of lead and sulphuric acid.—*Annals of Pharmacy*, Aug. 1853, from *Annalen der Chemie*.

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#### ON THE RECOVERY OF GOLD AND SILVER FROM THE FLUIDS EMPLOYED FOR ELECTRO-PLATING AND GILDING.

By PROF. BOLLEY.

The cyanide of gold dissolved in an excess of cyanide of potassium, resists most means of separation; even sulphuretted hydrogen produces no precipitate in it. The complete separation of the gold cannot be effected in the humid way; and this has given rise to the propositions of Büttcher, Hessenberg, Elsner and others, to evaporate the fluid, mix the dry residue with an equal quantity of litharge, fuse the mixture at a strong red heat, and dissolve the lead from the fused mass by hot dilute nitric acid; by this means the gold is left as a loose sponge. A more recent proposition is that of Wimmer, by which the mass left by evaporating the fluid to dryness on the water-bath is mixed with one and a half times its weight of nitrate of potash, and thrown in small portions into a red-hot Hessian crucible. The explosions must be waited for, and the process continued until the entire mass runs smoothly. The first process has nothing against it, except the necessity of a strong fire and the employment of nitric acid; the second, on the contrary, is very unpleasant and unsafe in its performance. It is sufficiently well known that there is no substance with which nitrate of potash detonates so violently when heated as with cyanide of potassium. If the portions of the mixture employed be only a little too large, very violent explosions are produced, which cannot take place without loss.

The following process may be adopted in small operations with a platinum crucible over a spirit-lamp. The dried mass of salts is mixed with an equal quantity of powdered muriate of ammonia, and gently heated. The ammoniacal salts decompose the cyanides of the metals, forming cyanide of ammonium, which is decomposed and volatilized, whilst the acid of the ammoniacal

salt or the halogen combined with the ammonium unites with the metal which has been combined with the cyanogen. In the present case muriate of ammonia forms chloride of potassium, chloride of iron (when ferrocyanide of potassium has been employed) and chloride of gold. The latter is readily decomposed, with formation of metallic gold; the other, at least partially, with separation of peroxide of iron, in fine crystalline scales. Undecomposed chloride of iron, as well as chloride of potassium, may be extracted with water after complete decomposition, for which a slight red heat is sufficient; the gold forms a coherent spongy mass; the iron, fine light scales, which are readily separable by mechanical means. If any gold remain in the form of dust with the peroxide of iron, it may be dissolved out with nitromuriatic acid (the calcined oxide of iron long resisting the action of the acid,) and the gold thrown down by protosulphate of iron. In most cases this mode of separation will be unnecessary. The author has convinced himself, by the employment of measured volumes of the same solution of gold, evaporation, heating with muriate of ammonia, and so forth, that even the quantity of gold in such solutions may be determined with sufficient exactness.

The same process may be adopted with plating fluids; chloride of silver is obtained together with oxide of iron (from the ferrocyanide of potassium;) the chloride is readily dissolved by ammonia; metallic silver, of which however but little or none is formed, is extracted by nitric acid. It is unnecessary to say that the residue is operated upon in the usual manner to obtain the silver; nevertheless, as the decomposition of the plating fluids may be effected in the humid way by means of sulphuretted hydrogen, this process may not be so frequently adopted for silver.

Lastly, it may be useful to inform those persons who occupy themselves with electro-plastic processes, that the employment of chloride of ammonium or a salt of ammonia in this manner, furnishes a ready means of testing the composition of such fluids as are used in the formation of a galvanic coating. For solutions of copper the author employs sulphate of ammonia, because when muriate of ammonia is employed, chloride of copper is formed, which is partially volatilized with the undecomposed sal ammoniac, producing a loss of copper.—*Chemical Gazette*, Sept. 1853, from *Polytechn. Centralblatt*, 1853, p. 551.



ON THE PRETENDED OCCURRENCE OF IODINE IN MILK, EGGS,  
AND THE ATMOSPHERIC AIR.

BY DR. LOHMEYER.

Some years since, Chatin instituted some investigations upon the distribution of iodine; he not only found it in all spring-waters, in fresh water and land plants, in the most various articles of food, in artificial beverages such as wine and beer, but, according to him, it constantly occurs also as an essential constituent in the inhabitants of our rivers and in land animals.

As it was shown, about the same time, by Meyrac, Marchand and others, that the distribution of iodine is much more considerable than had hitherto been supposed, it could excite no surprise that it should be found in the animal organism; here, as everywhere in nature, it was to be regarded as the constant companion of the chlorine compounds.

Chatin, however, regards iodine not as an incidental, but as an essential constituent of the organs; and according to his statements with respect to the quantities of it contained in eggs, milk, &c., he appears to be perfectly right in so doing. According to Chatin, a hen's egg contains more iodine than 1 litre of milk, whilst this again contains more than our usual articles of food and beverage. He also considers iodine to be of importance in the respiratory process. Normally the air contains 1.500 milligram. of iodine in 4000 litres, and during respiration 4.5 are said to disappear. Fourcault, who has occupied himself with the study of the causes of goitre and cretinism, examined the air in those places where these diseases are indigenous; in these localities he found the atmosphere free from iodine, and concluded accordingly that the deficiency of iodine was the principal cause of goitre and cretinism. Chatin immediately proved that the air of the Alps was much poorer in iodine than the atmosphere of Paris; he found less iodine in the valley of the Rhone than in that of the Seine, less still in the valley of the Isère, and a constant diminution towards the Alps. He only met with it again in the plain of Piedmont, after it had eluded his investigations on the French side of the Alps.

As therefore the influence of iodine appears to be of the greatest importance to the development and continuance of the animal organism, the author regarded the testing of Chatin's statements

as of sufficient importance to undertake it himself with great care.

Goitre does not occur in Göttingen, whilst in some of the neighboring villages, in Lengden, for instance, it is very frequently met with. If the want of iodine in the air were the cause of the evil, it might be expected that a difference would be presented between the quantity of iodine contained in the air of Göttingen and that of Lengden. The author therefore examined first the air of Göttingen; he allowed 4000 litres of air to pass in small bubbles through a stratum of solution of caustic soda 18 inches in thickness, adding quick lime to the solution from time to time to remove the carbonic acid which was taken up by it. The apparatus was so arranged that the passage of 4000 litres of air required nearly a whole week, so that no iodine could be lost. Nevertheless, on testing for iodine, a negative result was obtained so that an investigation of the air of Lengden must appear perfectly unnecessary.\*

The author has sought for iodine in cow's milk and hen's eggs with a similar result. Thus no trace of iodine was to be found in 12 eggs or in 600 or 6700 grms. of milk. The fluids in which the iodine must be concentrated amounted in all cases only to a few centimetres; for testing them, cold starch-paste and pure nitric acid into which nitrous acid had previously been passed were employed.

The author does not deny, that, by the employment of still larger quantities of milk and eggs, the exhibition of iodine may perhaps be possible and that under certain circumstances iodine may also occur in the atmosphere, especially in the neighborhood of manufactories and chemical laboratories; but from his experiments he considers that he may draw the conclusion, that Chatin's statements are to be considered as erroneous throughout, and that the absence of iodine in the air cannot be the cause of goitre and cretinism.—*Chemical Gazette*, Sept. 1853, from *Nachrichten von der Gesellsch. der Wiss. zu Göttingen*, 1853, p. 131.

\*The same result was obtained by Mr. S. Macadam of Edinburgh (see *Chem. Gaz. for Ang.* 2, 1832,) with whose researches the author does not appear to be acquainted.—ED. [See also page 64 of this volume for the same paper.]

## REMARKS ON THE ARTIFICIAL PRODUCTION OF SALTPETRE.

By R. REICHENBACH.

It is only within the last few years that general assent has been given to the opinion that the production of saltpetre consists in an oxidation of ammonia, determined or facilitated essentially by the presence of alkaline or earthy bases.

The occurrence of native saltpetre is well known to be intimately connected with the decay and disintegration of calcareous rocks, especially felspathic limestone, which are at the same time more or less rich in organic remains, and consequently contain a certain amount of nitrogenous substance. It is this animal substance, which at a sufficient temperature suffers chemical change; that is to say, passes more or less rapidly into putrefactive fermentation, the nitrogen being either wholly or principally converted into carbonate of ammonia. Under ordinary circumstances, this volatile ammoniacal salt gradually escapes into the atmosphere; but when generated with a porous mass of rock, which admits of the penetration of atmospheric oxygen, it suffers a partial decomposition and oxidation to nitrate of ammonia as well as nitrates of lime and potash.

It is, moreover, a general fact that whenever animal substance is brought into immediate contact with potash, lime, and sand, and the whole exposed to the air, there is an abundant formation of nitrates, and this observation has afforded both an explanation of the mode in which saltpetre is formed spontaneously and a means of obtaining it artificially. It has been found to be a condition of considerable importance that the heaps of substances prepared for the production of nitric acid should possess a certain degree of porosity, so that a very large surface may be exposed to the air absorbed.

The statement of these few facts connected with the artificial production of saltpetre will suffice for a consideration of the question. Whether this process corresponds to the present state of technical chemistry, or whether it is not capable of great improvement? On examining the process in detail it will be found,

1. That the mixture of the several substances is generally conducted with too much irregularity and uncertainty, so that it is difficult to ascertain whether they are in a proper proportion.



2. That the presence or preponderance of inorganic substances, although in one respect unavoidable, retards the progress of the putrefaction, and consequently the production of ammonia, from which alone the nitric acid is formed, and it is probably owing to this circumstance that the artificial production of saltpetre goes on with such remarkable slowness.

3. The uniform maintenance of a proper temperature is not sufficiently observed.

4. Since it has become evident that the presence of ammonia is the essential condition of the formation of nitric acid, it is possibly not necessary to produce the ammonia by putrefactive fermentation. There are many other sources from which it might be more readily obtained, and then submitted in a pure state to those conditions under which it is converted into nitric acid, and thus the whole operation would be simplified and rendered independent of local and accidental influences.

When, as in some parts of the continent, the production of saltpetre is made a collateral operation of agriculture, in which case space and time are of less importance, the old process is sufficient. But the case is different when it is required to produce a certain large quantity of saltpetre annually.

First, then, as regards the present process, it must not be forgotten in the mixing of the substances to make a nitre bed that the production of nitrate of potash is the ultimate object. Consequently this base must be present in some appropriate form and in sufficient quantity. It is best to use the lime in the caustic hydrated state. It might be possible to produce, in the first instance, nitrate of lime and then nitrate of potash by a subsequent double decomposition, but it would appear, *à priori*, improbable that the lime alone would be so effective in determining the formation of nitric acid as the mixture of lime and potash. This point is one which is certainly deserving of experimental investigation.

Assuming, then, that ammonia and potash are the two substances chiefly necessary for the production of saltpetre, it remains only to ascertain the precise conditions of its formation, and to ensure an adequate supply of these substances so as to be able to carry out the fabrication of saltpetre to any extent and with any degree of rapidity.

It is worth the attempt to ascertain whether the potash required may not be derived from certain rocks, especially granite, syenite, trachyte, porphyry, basalt, &c. It is probable that these substances, when reduced to a coarse powder and mixed with a proper proportion of caustic lime, would gradually yield up their potash, while the silicic acid combined with the lime. The native saltpetre of India is produced during the decay of a limestone containing potash.

Ammonia is now so abundant a product of technical processes, that there is little fear of obtaining it in sufficient quantity. In very many instances where it is now lost it would then be worth collecting; and if all sources were exhausted there would be no great difficulty in obtaining it from the atmospheric nitrogen. Ammoniacal gas is very copiously formed when a mixture of nitrogen and water vapor is passed over a mixture of carbon and carbonate potash at a red heat.

There are likewise two other possible sources of nitrate of potash, which, although at present possessing rather a theoretical than practical interest, ought not to be passed over.

When ammoniacal gas, mixed with oxygen, is passed over ignited spongy platinum, there is formed a considerable quantity of nitrate of ammonia, a salt which may readily be converted into nitrate of potash. It yet remains to be ascertained in what proportion this formation of nitric acid stands to the consumption of fuel, to the mass and condition of the platinum, and the duration of its activity, circumstances which will determine its applicability.

Ignited peroxide of iron exercises a precisely similar action upon ammonia in the presence of oxygen, and consequently, on account of its greater abundance, will be more deserving of study in this respect.

There is, moreover, a fact long since observed by Cavendish, that by passing a number of electrical discharges through a mixture of nitrogen and oxygen, in the same proportion as in atmospheric air, a small quantity of nitric acid or nitrate of ammonia is formed. When the gaseous mixture contains hydrogen, the formation of nitric acid is remarkably facilitated, a circumstance which appears to be closely connected with the formation of traces

of nitric acid during the combustion of hydrogen in ordinary air. —*Pharm. Journ.*, Sept. 1853, from the *Jahrbuch der k. k. geologischen Reichsanstalt*, Jahrg. I., No. 2.

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#### ON THE MEANS OF DETECTING PICRIC ACID IN BEER.

By M. J. L. LASSAIGNE.

It was stated about a year ago, in the *Journal de Chimie Médicale*, that picric acid was sometimes used as a substitute for part of the hops in the manufacture of beer. This adulteration, which has been adopted in some localities, cannot be tolerated, and it was with the view of putting a stop to such a practice that the following experiments were made.

The bitter taste of picric acid, which has the same character as that of the hop, cannot be distinguished by the taste from the latter when contained in beer, as I have satisfied myself by direct experiment; but its presence may be detected by some simple chemical reactions.

In studying the properties of picric acid, I have observed that this acid, which communicates its color and bitterness to water, when dissolved in beer is not precipitated by subacetate of lead, while the bitter principle and the color of the hop are almost entirely removed by that reagent. I have also observed that animal charcoal, whether purified or not, is capable of absorbing and removing the coloring matter of beer, while picric acid is unacted upon by it, the liquor retaining its original color unaltered by the charcoal.

It is on the properties possessed by these two reagents that I have founded the means of detecting small quantities of picric acid when added to beer.

In the experiments I have made on this subject I have operated on pure beer of good manufacture, and on some to which I have added one twelve thousandths and even one eighteen thousandths of picric acid. On adding to both samples an excess of tribasic acetate of lead, or agitating them with excess of animal charcoal, the pure beer is almost completely decolorized, while that containing the picric acid in the proportions mentioned, retains a citron yellow color in consequence of the picric acid not being removed.



For the detection of a smaller proportion of picric acid in beer than that above mentioned, it is necessary to concentrate the liquid before adding the reagents.—*Lond. Pharm. Journ.*, Sept., 1853, from *Journal de Chimie Médicale*.

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ON CATHARTIN OBTAINED FROM THE BERRIES OF RHAMNUS CATHARTICA.

BY F. L. WINKLER.

To obtain the purgative principle of these berries, fifteen pounds of them, when quite green, (collected in September,) were bruised and expressed. The juice had a dark violet color, an extremely bitter taste, and evaporated by means of a water bath, remained as a dark brown syrup. This was then exhausted several times by boiling hot alcohol (absolute) until the latter had but a slightly bitter taste. The united tinctures became turbid after cooling; they were then filtered and mixed with four times as much sulphuric ether. A large quantity of slightly bitter, dark-colored, extractive matter separated, containing no sugar. The filtered solution of cathartin in ether and alcohol was distilled in a water-bath, the cathartin remaining with the coloring matter, then treated again in the same way, and  $2\frac{1}{2}$  ounces of pure cathartin were obtained.

The residuum of the expressed berries was boiled with six or eight times its weight of water, set aside for several days, and a good quantity of impure RHAMNIN obtained. This was then collected on a filter of dense linen, washed with water, dried, and appeared as a greenish gray mass, of a slightly bitter taste, loosely coherent. This, again dissolved in alcohol, was decolorized by animal charcoal, separated by the addition of water, and thus obtained in a pure state. The dry mass was dissolved again in absolute alcohol, and by slow evaporation ten drachms of pure Rhamnin, crystallized in pale yellow crystals, similar to cauliflower, of a peculiar taste, little distinct, almost like dough; it is not soluble in cold alcohol nor ether, but readily soluble in boiling alcohol, and forms a mucilage, if boiled in water.

It is dissolved by caustic alkalies and their carbonates, with saffron yellow color, tasting almost like grape sugar, and deco-

lorized by acids, by which operation the Rhamnin is precipitated. It is likewise dissolved by strong chlorohydric and sulphuric acid with the same color, and precipitated by a large quantity of water. Hot nitric acid converts the Rhamnin into oxalic acid, a yellow, bitter substance, (perhaps picric acid), and a new crystalline substance.

Ripe buckthorn berries yielded Cathartin, but no Rhamnin; and it is probable that the Rhamnin by the ripening process, is converted into Cathartin and grape sugar.

Cathartin is a pale yellow powder, soluble nearly in any proportion of water and spirits, (not in pure ether), has a disagreeable, bitter taste, like aloes, is neutral, turns of a dark, brownish green by deutochloride of iron, gold yellow by liquor subacetatis plumbi and the alkaloids, fuses by heat, and is decomposed at a high temperature; acted on by nitric acid, it yields a good quantity picric acid.

The resemblance of Cathartin to pure Aloin is extended, likewise, to physiological properties. Dr. Graff, president of the medical board, (medical director,) wrote to me as follows:

"Since I had the honor to receive your compound pills of cathartin and liquorice, I have experimented with them frequently and with good effect. Pills containing one grain of cathartin, cause, in strong persons, one or two stools; in weaker ones, three or four, without any griping. In many cases the dose had to be repeated after three or four hours, to operate well. A young, stout mechanic, 20 years of age, suffering under an affection of the liver, had to take three pills pro dose, two or three times a day, to produce one or two large discharges; after taking them continually, he wanted but one dose of three pills for the same effect. In general, it is advisable to commence with one grain of cathartin, and then to increase the dose if necessary. On a sick man one grain of Cathartin had no effect at all, but taking two, he had four or five moderate stools, etc., etc. This remedy is certainly very valuable in constipation of the bowels, obstructions of the liver and spleen, in hæmorrhoids, hydropsy, and gout."

If the juice of unripe buckthorn berries be evaporated to the consistence of a syrup, and then treated with liquor Hoffmanni, (one part of ether and two parts of alcohol of 80°), cathartin is obtained in an impure state; but being very powerful it will

answer any purpose better than aloes, and should be administered, because it can be obtained at a moderate price, twelve pounds of fresh expressed juice yielding about eight ounces of cathartin.—*New York Journal of Pharmacy*, April, 1853, from *Jul. Ruthardt, Pharmaceut.*

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#### THE ACTION OF CARBONIC AND BORACIC ACIDS ON TINCTURE OF LITMUS.

Malaguti observes, that these acids behave towards tincture of litmus as all other acids, when they are allowed to act in sufficient quantity. These acids, as is known, communicate a wine coloration to the tincture; they are considered, on that account, as very weak acids, because the other acids only produce this coloration when they are diluted in an extraordinary degree.

When carbonic is forced, under a pressure of  $1\frac{1}{2}$  to 2 atmospheres, into diluted tincture of litmus, it colors the tincture onion-red; but when the pressure is removed, and the excess of gas separated, either by a vacuum or a gentle heat, the tincture acquires a wine-red color. When a little tincture of litmus is poured into a hot saturated solution of boracic acid, after it has cooled for twenty-four hours, and the excess of acid separated, the mixture assumes a wine-red color; however, when the mixture is heated to dissolve the excess of boracic acid, it becomes onion-red. When the excess of acid is allowed to crystalline out, it assumes again the wine-red color. When the fluid is viewed in a thick stratum, in a glass tube, in the direction of its axis, the difference of the shades of color between a hot saturated and a cold saturated solution may be easily perceived. A hot saturated solution of boracic acid produces an onion-red color, when a little tincture of litmus is poured into it.

Sulphuretted hydrogen gas cannot be applied for a similar experiment, because it acts as a reducing agent on the coloring matter when pressed into the tincture of litmus.—*Annals of Pharmacy*, July, 1853.



## ON THE PREPARATION OF COLLODION WOOL OR GUN-COTTON

By C. MANN.

During the last few months numerous statements have been made with regard to the preparation of collodion wool, from the general results of which it appears that in adopting the several methods certain proportions of the reagents must be strictly adhered to, although, frequently, these proportions are not even mentioned in the directions given.

The author of the present paper has made a series of experiments, with a view to determine what are the conditions that determine the good or bad quality of this substance. He finds that this very much depends upon the percentage of water in the sulphuric and nitric acids. In proportion as the quantity of water in the mixture exceeds a certain normal, either the collodion wool is bad or none is formed. Very concentrated sulphuric acid yields a product which, though good while in a fresh state, decomposes even at the ordinary temperature; more dilute acid, on the contrary, yields a worthless product. Neither of these products dissolve in a mixture of alcohol and ether. According to the state of hydration of the acid, the cotton may be obtained of different characters, varying gradually from an extremely soluble form to one which is equally insoluble. When, by the use of too concentrated sulphuric acid, an insoluble wool has been obtained, this may easily be rendered soluble by steeping it in the proper mixture of acid, and inversely good collodion wool may be rendered insoluble. Thus, for instance, cotton treated with a mixture of fourteen parts  $3(\text{SO}_3 \text{HO}) + \text{HO}$ , and twelve parts  $\text{NO}_5 \text{HO}$ , yields an insoluble product, which, when steeped in the mixture of fourteen parts  $(\text{HO})_3 \text{SO}_3$  and twelve parts  $\text{NO}_5 \text{HO}$  is converted into soluble collodion wool. As a general rule, the conditions which determine the quality of the product, are, 1. The hydration of the sulphuric acid; 2. The presence of a certain quantity of hyponitrous acid in the nitric acid; 3. The temperature; and 4. The time of steeping.

The process which the author adopts is the following:—Sulphuric acid of from 1.830 to 1.835 specific gravity, that is, of ninety-four per cent. of monohydrate, according to Ure = 65°.5 Baumé, at 59°.9 F., and represented by the formula  $3(\text{SO}_3 \text{HO}) + \text{HO}$  is mixed with nitrate of potash and cotton wool, neither of which require to be dried, in the following proportions:—

- A      1 part cotton wool  
          31 parts  $3(\text{SO}_3 \text{HO}) + \text{HO}$  equiv. = 156  
          20 parts  $\text{KO NO}_3$  equiv. = 101

The powdered nitrate is mixed with the sulphuric acid in a glass cylinder, the mixture stirred until the nitrate is entirely dissolved. Into this mixture while still warm, but not at all more than  $122^\circ$  Fah., the cotton wool is introduced and agitated with a rod until perfectly saturated with the acid liquid. The cylinder is then to be covered with a glass plate, and the whole left to stand for about twenty-four hours at a temperature of  $84.4^\circ$  or  $86^\circ$  F. The mixture is then placed in a porcelain mortar, and washed with cold water, until the wool has no longer an acid reaction. The moist wool is finally freed, by treatment with boiling water from the last traces of sulphate of potash, which is very obstinately retained by the cotton fibres, and communicates to the collodion solution an opalescent appearance.

When the cotton wool is allowed to remain for five or six days in the mixture at a temperature of  $86^\circ$  F. the collodion wool is improved in quality. When the steeping is continued only for ten or twenty minutes, the product is less perfect.

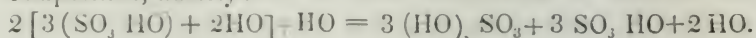
Collodion wool may likewise be obtained with nitrate of soda, in which case, however, sulphuric acid of 1.800 sp. gr. =  $64^\circ.5$  Baumé is requisite. This acid may be represented by the formula  $3(\text{SO}_3 \text{HO}) + 2 \text{HO}$ . The proportion to be used are:—

- B.       $\frac{1}{2}$  part cotton wool  
          33 parts  $3(\text{SO}_3 \text{HO}) + 2 \text{HO}$  equiv. = 165  
          17 parts  $\text{NaO NO}_3$  equiv. = 85

Other mixtures of sulphuric acid and nitrate of potash or soda may be made, which yield equally good or even better collodion wool when applied to the cotton in different proportions. Thus the author made experiments with the following mixtures:

- C.      2 parts cotton wool  
          66 parts  $2[3(\text{SO}_3 \text{HO}) + 2 \text{HO}]$  equiv.    330  
          20 parts  $\text{KO NO}_3$

The sulphuric acid which is used with nitrate of soda, and in which case a double quantity is requisite, must possess a different composition, namely:—

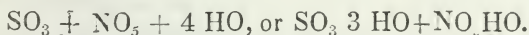


Further, collodion wool is obtained by using:

- D. 1 part cotton wool  
 35 parts 3 (HO)<sub>2</sub> SO<sub>3</sub> equiv. = 174 spec. grav. 1.780\*  
 33 parts 3 (SO<sub>3</sub> HO) + 2 HO equiv. = 165  
 17 parts NaO NO<sub>3</sub>

As in the first experiment, this mixture of acid and salt, after standing for twelve hours at the ordinary temperature, produced some slight blackening and solution of the cotton-wool, it appeared probable that the sulphuric acid had not had sufficient time to decompose the nitrate of soda completely. In a subsequent experiment, therefore, the author allowed the mixture of acid and salt to stand for twenty-four hours, stirring it frequently. On then introducing the cotton-wool no decoloration took place, and after the mixture had stood for five days at a temperature of 86° F., the collodion wool obtained proved to be of excellent quality.

From the definite states of hydration of the sulphuric acid requisite for the nitrates of potash and soda respectively, it may be seen what must be the state of the sulphuric acid when nitric acid is employed instead of the nitrates in the preparation of collodion wool. The author has ascertained by experiment that among the products of the decomposition of KO NO<sub>3</sub> + 3 SO<sub>3</sub> HO + HO, the member KO 2 SO<sub>3</sub> is of no importance in the production of collodion wool, and that this is likewise the case among the products of the decomposition of NaO NO<sub>3</sub> + 3 SO<sub>3</sub> HO + 2 HO, with regard to the member NaO SO<sub>3</sub> + SO<sub>3</sub> HO. Consequently these may be excluded from consideration, and then the mixtures may be represented by the formulæ



which is the appropriate mixture of acids for preparing collodion wool.

- E. 1 equiv. SO<sub>3</sub> 3 HO spec. grav. = 1.632 = 56° Baumé  
 1 equiv. NO<sub>3</sub> HO spec. grav. = 1.518 to 1.512 = 49.6 to 49.12 B.

yield a mixture which converts cotton-wool into excellent collodion wool.

When the sulphuric acid is more concentrated and the nitric acid more dilute, the quantities to be taken of each so as to have 1 equiv. SO<sub>3</sub> for every equiv. NO<sub>3</sub> and 4 equiv. HO, may be determined by calculation.

For preparing collodion wool with monohydrate of nitric acid, the quantities to be taken are :

\* The mixture of the two acids had a specific gravity of 1.790 = 64° B.



F        1 part cotton wool  
           13 parts  $\text{SO}_3$  3 HO equiv. = 67  
           12 parts  $\text{NO}_5$  HO equiv. = 63

Further, when from the mixture of nitrate of potash and sulphuric acid =  $\text{KO NO}_5 + 2 (3 \text{SO}_3 \text{HO} + 2 \text{HO})$  the  $\text{KO } 2 \text{SO}_3$  is, as above, disregarded, a second prescription for the preparation of collodion wool is obtained. There then remain

$4 \text{SO}_3 + \text{NO}_5 + 10 \text{HO}$ , or  $3 (\text{SO}_3 2 \text{HO}) + \text{SO}_3 3 \text{HO} + \text{NO}_5 \text{HO}$ . The same result is obtained when  $\text{NaO SO}_3 + \text{SO}_3 \text{HO}$  is deducted from  $\text{NaO NO}_5 + 2 (3 \text{SO}_3 \text{HO}) + 2 \text{HO} + \text{HO}$ . According to the formula then deduced the following quantities must be taken :

G        1 part cotton wool  
           33 parts 3  $\text{SO}_3$  2 HO  
           13 parts  $\text{SO}_3$  3 HO  
           12 parts  $\text{NO}_5$  HO

The mixture of the two acids has a sp. gr. of 1.753 or 1.750 = 63° B.

Collodion wool may be prepared both with the nitrates of potash or soda, and in a much shorter time than has been stated above, when the cotton-wool is treated with them for about an hour, at a temperature of 104° or 122° F., and this is likewise the case with a mixture of nitric acid and the double quantity of sulphuric acid. But the mixture of thirteen or fourteen parts  $\text{SO}_3$  3 HO and 12  $\text{NO}_5$  HO does not, when the latter acid is very yellow, bear so high a temperature, and not even the ordinary temperature, because the hyponitrous acid generated alters the character of the collodion wool, at least in so far that its solution in a mixture of alcohol and ether gives, when evaporated upon a glass plate, an opalescent layer, and not a transparent one, like good collodion wool. When the monohydrate of nitric acid contains much hyponitrous acid, the layer has a milky appearance, and inversely the collodion layer is clearer and more colorless the smaller the quantity of hyponitrous acid present in the liquid with which it is prepared.

When cotton wool is treated with the mixture of sulphuric and nitric acids, at the temperature of 32° F., collodion wool is formed, but very slowly and imperfectly. The temperature of 41° or 46.5° F., appears to be the most favorable.

Collodion wool prepared according to any one of the methods

above described, and especially that which directly after being washed, is strongly pressed and then freed as much as possible from adhering moisture between bibulous paper, dissolves very readily in a mixture of seven or eight parts of ordinarily pure ether, and one part of absolute alcohol. The solution may be diluted with an equal quantity or even more ether, without any separation of the dissolved substance. The perfectly dry collodion wool dissolves rather slowly in the mixture of alcohol and ether, a character presented more especially by the wool prepared at low temperatures. But when the dry collodion wool is moistened with water, and then well pressed, it dissolves as readily as when fresh made. The collodion wool which is prepared with mixtures either of nitrate of potash or monohydrated nitric acid, with the so-called single quantity of sulphuric acid, and at a higher temperature, is but little dissolved, and for the most part only disintegrated by a mixture of eight parts anhydrous ether and one part absolute alcohol; that prepared with mixtures either of nitric acid, nitrates of potash or soda, with the double quantity of sulphuric acid, and at a temperature of about  $86^{\circ}$  F. is not even disintegrated by this mixture of ether and alcohol, and appears to be insoluble in it. Ether, free from water and alcohol, dissolves scarcely any collodion wool, even when it contains water. The same is the case with absolute alcohol and watery spirit in reference to collodion wool prepared at temperatures much below  $104^{\circ}$  or  $122^{\circ}$  F.

The collodion wool prepared with a mixture of thirteen parts,  $\text{SO}_3 \cdot 3\text{HO}$  + twelve parts  $\text{NO}_5\text{HO}$  and one or two parts cotton wool by digesting for two hours at  $104^{\circ}$  or  $122^{\circ}$  F., dissolves in absolute alcohol, and gives a thick, clear solution, like ordinary good collodion solution made with a mixture of ether and alcohol. This alcoholic solution evaporates very slowly, and leaves upon the glass plate a clear, colorless, hard layer.

The mixtures A D F yielded collodion wool, which admitted of being dried at  $212^{\circ}$  F. without decomposing, and of being kept for years without alteration. The author was unable to arrive at any corresponding results by the analysis of collodion wool which had been purified by means of carbonate of soda.—*Pharm. Journ.* Aug. 1853, from *Bullet. de St. Petersburg*, vol. xi., p. 210.

## ON THE ALKALOIDS OF THE CINCHONAS.

By L. PASTEUR.

It is about half a century since *cinchonine*, previously noticed by Dr. Duncan of Edinburgh, was first isolated by Gomès, a physician of Lisbon. To its presence he attributed the action of the cinchona barks; but he misunderstood its alkaline nature, which was not thoroughly appreciated until about 1820 by MM. Pelletier and Caventou; at this period these chemists also discovered *quinine*. About twelve years afterwards, two other French chemists recognized a third alkaloid, to which they gave the name of *quinidine*, in the yellow jesuit's bark. In the year 1829, Sertuerner, who had already become celebrated by his discovery of morphine, pointed out the existence, in the mother-waters of sulphate of quinine, of an uncrystallizable base, which he called *quinoidine*, and to which he attributed wonderful febrifuge properties.

The general properties of quinine and cinchonine are pretty well known; but with regard to quinidine and quinoidine, the most contradictory opinions prevail. I believe I have got rid of all the difficulties. The results of my labors also exhibit quite new molecular relations between the various alkaloids of these barks. The following are the new facts at which I have arrived.

1. *Cinchonicine*.—When cinchonine in any saline combination is exposed to the action of heat, it is converted into a new base isomeric with, but quite distinct from cinchonine. I call it *cinchonicine*. All the salts of cinchonine may serve for the preparation of cinchonicine; but in order that the conversion may be easily and completely effected, it is necessary to place the salt in certain conditions. In general, when salts of cinchonine are heated, they fuse and become decomposed immediately; and if the fusion of the salt be not effected by some means at a temperature sufficiently distant from the point of decomposition, the cinchonicine will certainly be formed, but destroyed immediately by the further action of the heat. Ordinary sulphate of cinchonine, for instance, when heated directly, becomes fused and then immediately destroyed, furnishing a fine red resinous matter, which is a product of the alteration of cinchonicine. But if a little water and sulphuric acid be added to the sulphate before subjecting it to the action of heat, it remains fused even after the expulsion of all the water at



a low temperature ; and it is sufficient to keep it in this state at a temperature of  $248^{\circ}$ – $266^{\circ}$  F. for three or four hours, to convert it entirely into sulphate of cinchonine. The production of coloring matter is very trifling, nearly inappreciable.

I prove, by facts which will be accepted by all chemists, that if heat plays a great part in this transformation of cinchonine, the vitreous, resinoid state of the product has a certain influence ; and the present case of isomerism certainly related to those metamorphoses, of which mineral chemistry offers us several examples, such as soft sulphur, red phosphorus, and vitreous arsenious acid.

2. *Quinicine*.—All that has been stated in the preceding section with regard to cinchonine applies equally to quinine. Any salt of this base, heated in the same manner as the salt of cinchonine, is also converted into a new base isomeric with quinine. I call this new base *quinicine*. The most convenient mode of preparing it consists in adding a little water and sulphuric acid to the sulphate of quinine of commerce, and exposing it to the heat of an oil-bath of  $248^{\circ}$ – $266^{\circ}$  F. for three or four hours ; the salt remains fused even after the expulsion of all the water, and becomes completely converted into sulphate of quinicine, with a very minute production of coloring matter.

As regards the general properties of cinchonine and quinicine, they offer well-marked analogies with the isomeric bases from which they are derived. They especially present the greatest resemblance to one another. Both of them are nearly insoluble in water, but very soluble both in absolute and ordinary alcohol. They both combine readily with carbonic acid, and expel ammonia from its saline combinations in the cold. They are both precipitated from their solutions in the form of fluid resins in the same manner as quinine under certain circumstances. They both deviate the plane of polarization to the right. They are very bitter and febrifuge.

3. *Quinidine*.—The contradictions to be met in the works of chemists with regard to this substance all arise from a fact which has escaped them, namely, that under the name of quinidine two very distinct alkaloids have been confounded ; these are nearly constantly associated by mixture in commercial quinidine, if it has not been purified by several successive crystallizations. Thus the quinidine discovered in 1833 by Henry and Delondre is quite a

different thing from that which is now called by that name in Germany and France, and the German product is very often mixed in considerable proportion with that discovered by Henry and Delondre. All the details of the properties and composition of these two quinidines will be found in my memoir. I will only add, that one of them, for which I retain the name of *quinidine*, is hydrated, efflorescent, *isomeric with quinine*, deviates the plane of polarization to the right, and possesses, like quinine, the character of acquiring a green color by the successive addition of chlorine and ammonia; whilst the other, to which I give the name of *cinchonidine*, is anhydrous, *isomeric with cinchonine*, exercises a rotatory power to the left, and does not exhibit the green coloration. This is now the most abundant of the two in commercial samples. It is always very easy, by exposing a recent crystallization of cinchonidine to warm air, to ascertain whether it contains any quinidine. All the crystals of the latter base effloresce immediately, retaining their shape, and standing out of a dead white amongst the clear crystals of cinchonidine. We may also recur to the character of the green coloration by chlorine and ammonia.

There are consequently four principal alkalies in the cinchona barks, quinine, quinidine, cinchonine and cinchonidine.

4. *Action of Heat on Cinchonine and Cinchonidine.*—I have submitted the two new bases quinidine and cinchonidine to the moderate action of heat, as I had done with quinine and cinchonine, and with exactly the same results; that is to say, the two new bases are converted into isomeric bases, weight for weight, with the same facility and under the same conditions as quinine and cinchonine. But, moreover, and this is undoubtedly one of the most important facts in this investigation, the two new bases obtained by the transformation of quinidine and cinchonidine are identical, the first with quinicine and the second with cinchonicine. In this manner we arrive at this remarkable result, that of the four principal bases contained in the cinchona barks, namely, quinine, quinidine, cinchonine and cinchonidine, the first two can be converted, weight for weight, into a new base, quinicine, which proves that they are themselves isomeric; whilst the two others are converted under the same conditions into a second base, cinchonicine, which proves that they are also isomeric.

The molecular relations, to which these results call the attention

of chemists, take a new character when we compare the rotatory powers of the six preceding alkalies. Quinine deviates to the right, quinidine to the left—both to a considerable extent. Quinicine deviates to the right, but to a very small extent compared with the rotatory powers of the two others. The same relations are presented by the three other isomeric bodies, cinchonine, cinchonidine, and cinchonidine. Cinchonine deviates to the right, cinchonidine to the left, both considerably; cinchonidine, on the contrary, produces very slight deviation to the right. The most logical interpretation of these results is the following:—The molecule of quinine is double, formed of two active bodies, one which deviates considerably to the left, and the other very slightly to the right. The latter, which is permanent under the influence of heat, resists isomeric transformation, and remaining without alteration in the quinicine, gives this its feeble deviation to the right. The other group, which on the contrary is very active, becomes inactive when the quinine is heated so as to become converted into quinidine; so that quinidine is nothing but quinine in which one of the active constituent groups has become inactive. Quinidine would also be quinidine in which one of the active constituent groups had become inactive; but in quinidine this very active group would be right instead of left as in quinine, but still united with the same slightly active right group, which being permanent remains in the quinidine, and gives it its weak right deviation. I might repeat all that I have said word for word, applying it to cinchonine, cinchonidine and cinchonidine, which are respectively constituted like their three congeners; they offer exactly the same relations.

5. *Quinidine*.—I shall not enter into the detail of the experiments which I have undertaken upon quinidine; but there is one point to which I wish to call the attention of manufacturers of sulphate of quinine and of the companies who collect the barks of cinchonas in America. Quinidine is always a product of the alteration of the alkalies of the cinchonas. It has two distinct origins. It is produced in the operations for the manufacture of sulphate of quinine, and especially in the forests of the New World, when the wood-cutter, after stripping the bark from the tree, exposes it to the sun to dry it. Then the salts of quinine, cinchonine, &c. contained in the bark, become converted into resinous and



coloring matters, which form the greater part of the quinoidine of commerce. I have ascertained, in fact, that when a salt of quinine or cinchonine in a dilute or concentrated solution is exposed to the sun even for a few hours, it becomes changed to such an extent that the liquid acquires an extremely dark reddish-brown color. This change, moreover, is of the same nature as that which is effected by the influence of an elevated temperature. I believe, therefore, that considerable loss of quinine, cinchonine, &c. would be avoided, and that the extraction of these bases would be rendered more easy, if the bark was shaded from the light when collected, and dried in the shade. The manufacturer of quinine ought also to avoid the action of a bright light.—*Comptes Rendus*, from *Chem. Gazette*, Sept. 1, 1853.

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#### ON TRUE AND FALSE CREOSOTE.

BY GORUP-BESANEZ.

Creosote has been seldom the object of scientific investigation since its discovery. The consequence is, that our knowledge of this interesting body remains very imperfect. Indeed, as great a confusion has prevailed as with phenylic acid, a body whose properties exhibit so great an agreement with those of creosote as to give rise to the belief that they were both identical, and that the difference only depended upon some accidental impurities. This is the view which has been more and more developed amongst chemists, and found an important support in the fact that the substance mostly found at present in commerce under the name of creosote, is nothing else than impure phenylic acid, and is obtained from coal tar, which can be easily proved by the determination of its boiling point, and its behaviour to chloride of iron, &c.

The creosote which I examined was obtained from Batka, of Prague, who prepares it extensively from wood tar, particularly from that of beech wood. Its characteristics and general behaviour agree completely with the description given of creosote by Reichenbach, its discoverer. It is an oily, strongly refracting, slightly yellowish fluid, of a penetrating, disagreeable, smoky, peculiar odor, totally distinct from that of phenylic acid. It tastes burning sharp; produces on the mucous membrane of the tongue a white film. In

sprit and ether it is completely soluble ; in water little ; yet, when shaken with water, it communicates its taste and odor, as well as its reactions. In sulphuret of carbon it is entirely soluble ; on the contrary, only partly so in acetic acid. In solution of ammonia it is likewise soluble, and somewhat colors it, but on the water bath all the ammonia is evolved. Muriatic acid produces no change ; on the contrary, it mixes with concentrated sulphuric acid completely, and assumes a purple violet color. A splinter of pine wood, moistened with muriatic acid, assumes, when immersed, not the slightest trace of a blue or a violet color, and chloride of iron, free from oxygen, produces not the least blue violet coloration, which this re-agent does in very dilute solutions of phenylic acid. Nor could I obtain it crystallized, although completely deprived of water, when I repeatedly exposed it to low temperatures. The specific gravity of the crude product ranged between 1,046 and 1,049. By the observation of its behaviour in high temperatures, with reference to its boiling point, the following results were obtained :—At 194 Fahr. slight ebullition took place. After a deposit had exhibited itself on the neck of the retort, between 140°, and 158°, and a milky turbid fluid had began to pass over, consisting of water, with a very fetid oil of a lower specific gravity than the water, the boiling proceeded with a continued elevation of the thermometer, and became stronger at 320°, but then almost ceased. The liquid passing over between 248 and 325°, was now clear, and possessed a peculiar odor, differing from the crude products. At 390° the boiling was again stronger, and now a body distilling in oily streaks passed over rapidly, while the thermometer rose to 398°, and now remained some time stationary ; after which it rose slowly to 406°, and then until its last portion was distilled over to 421°.

These relations show, what could scarcely have been previously Joubted, that the crude product was a mixture of several compounds. The circumstances that the greater portion passed over at a temperature between 397° and 406°, and that the thermometer remained some time stationary at this temperature, which is given in works of chemistry as the boiling point of creosote, show that this portion is the chief constituent of the crude material.

The next object was, therefore, the pure preparation and isolation of the creosote. For this purpose a large quantity of the crude pro-

duct was distilled, and that passing over between  $397^{\circ}$  and  $406^{\circ}$  was intercepted. This was now rectified, and allowed then to stand in a closed vessel for a day over fused chloride of calcium, and, lastly, a third time rectified. Here it was observed that the thermometer remained standing for a time at  $397^{\circ}$ , but it always rose during the distillation, if even slowly. The product purified in this way was subject to elementary analysis, with the following percentage results:—

	1	2	3	4	5	6	7	8
Carbon, . .	75,32	75,72	75,54	74,76	75,82	75,02	74,78	74,68
Hydrogen, . .	7,84	7,94	7,85	7,95	7,98	7,95	7,98	7,84
Oxygen, . .	16,84	16,34	16,61	17,29	16,30	17,03	17,24	17,48
	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

The properties of the creosote purified in the above way, by fractional distillation, were the following:—Colorless, oily, not or only a little acid; after a long time becoming dark, strongly refracting light, of a peculiar penetrating smoky odor, and biting, burning taste, of 1,040 specific gravity at  $52^{\circ}$  Fahr., not crystallizable, and also remaining fluid at very low temperatures, in water little soluble, in spirit and ether and sulphuret of carbon soluble in all proportions. Only partly dissolved by ordinary acetic acid. Dissolves sulphur, and coagulates albumen. Kills animals, in doses of 5 to 10 drops, in a few minutes' time, with convulsions. Preserves meat and animal substances in general.

From these properties and others, there can be no doubt that the body examined by me is very different from phenylic acid, and that it is the same body, namely, true creosote, which has been described by Reichenbach and Ettling.

Another question is, whether this body is a completely pure chemical compound; whether it is to be regarded as a chemical individuum. That in creosote such a chemical individuum exists there can be no doubt, only it appears to be mixed therein with a small quantity of a body, differing in its carbon contents, but equal in its hydrogen contents. The peculiarities already pointed out respecting the boiling point of the pure product, renders this manifest above all things.

In conclusion, I will offer a practical remark. When it is desirable in commerce to distinguish whether a substance sold for



creosote is carbolic or phenylic acid, or whether it is adulterated with this body, the boiling point perfectly affords the safest conclusion. But much simpler, and quite as certain, is to test the suspected fluid with chloride of iron and ordinary acetic acid. In the presence of carbolic acid, chloride of iron causes always a blue violet coloration, and afterwards a whitish turbidity; and acetic acid completely dissolves carbolic acid, in a gentle heat. Creosote prepared from beech-wood tar is not changed by chloride of iron, and is only partly dissolved by ordinary acetic acid in the heat. To those accustomed to the odor of real creosote, the odor of the false will be a sufficient guide.

Whether in wood tar, and generally among the products of the dry distillation of wood, carbolic acid is contained, was by an extensive research of this nature principally to be learnt. In tar water, obtained by the digestion of 3 pounds of beech-wood tar, with 18 pounds of water, I could detect readily creosote, but not phenylic acid.—*Annals of Pharmacy*, Sept. 1853 from *Liebig's Annalen*.

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#### CHEMICAL AND PHARMACOLOGICAL EXAMINATION OF KINO.

BY C. HENNIG.

The author first satisfied himself, by a comparison of the most trustworthy statements, that the officinal kino known among druggists as the East Indian, should more correctly be called African, because it is for the most part the air-dried juice, which exudes from incisions made in the stems of several species of *Pterocarpus*, *P. erinaceus*, and *P. senegalensis* growing in the forests of Senegambia, and *P. indicus* and *P. marsupium* growing upon the coast of Malabar, and other parts of the East Indies.

These so-called oriental varieties of kino all present the following physical characters: color garnet-red; fracture conchoidal. When chewed they color the saliva red by transmitted, and violet by reflected light; the taste is purely astringent. The fragments of kino treated with distilled water dissolve partially, communicating a yellowish red color to the water, which, when allowed to stand and even when excluded from the air, deposits a fine orange colored powder, forming a deposit of sometimes as many as three layers. This is again almost entirely dissolved by hot water or

alcohol. But neither boiling water or alcohol dissolve kino completely, a more or less swollen skeleton of each individual fragment always remaining. The addition of distilled water to the tincture causes a faint cloudiness, which disappears again spontaneously. Ether produces a precipitate in both aqueous and alcoholic extracts, but both become clear on standing. When the tincture, containing ether, is evaporated, it becomes turbid at the boiling point, from the separation of cinnamon-colored flocks, which subsequently redissolve with violent agitation of the liquid. Ether does not take up anything even from finely-powdered kino.

Tincture of kino reddens litmus somewhat more distinctly than the aqueous infusion. The former is precipitated by alkalies; the latter only by carbonate of ammonia; neither give any precipitate with lime water or tartrate of potash and antimony. Protochloride of iron gives with the aqueous infusion a deep green color, and green flocks separate after some time. Perchloride of iron gives a greyish or yellowish-green bulky precipitate; lead salts give various precipitates according as the infusion is prepared with hot water or cold, when air has access or the contrary.

African kino burnt in a porcelain crucible leaves about two per cent. of ash, consisting of phosphate of soda, carbonate of lime, and silicate of iron. When submitted to dry distillation it gives off an odor resembling vanilla, acid water then passes over (perhaps formic acid) and some empyreumatic substances not examined; pyrogallic acid could not be detected. Heated upon platinum foil it swells up, evolving first agreeable and then acid vapors.

As the author could not succeed in affecting a simple separation of the astringent principle of kino, the behavior of various reagents with aqueous and alcoholic infusions was more carefully examined. The separation of the tannic acid by means of a solution of gelatine recommended by Gerding, is imperfect; but if, on the other hand, a prepared animal skin is employed, only a little gallic acid is left in the liquid, inasmuch as the red coloring matter enters into combination together with the tannic acid, forming a red leather. The contact of oxygen with Gerding's coccotannic acid, gave a different result; a stream of oxygen passed through the aqueous infusion of kino does not cause any perceptible alteration of the tannin even after long warming, the coloring matter

alone appearing to be oxidized. The opinion that the red coloring matter is a product of the alteration of the tannic acid, is rendered improbable by the action of sulphurous acid, which gives to the aqueous infusion a yellow color, although the red substance is not converted into anything resembling tannic acid, but is partially precipitated in the form of orange-colored flocks, which redissolve in alkalies with a red color; the tannic acid gave the same reactions as before, and in the evaporated liquid crystals of the sulphate of the alkali used were formed. Moist chlorine behaved in a similar manner, with the exception that the yellow precipitate floated in a colorless liquid, and the tannic acid itself appeared to be altered.

The products obtained by the action of caustic potash upon raw kino, and those obtained by treating the powdered gum with hydrochloric acid for the purpose of separating the earthy bases, were submitted to analyses and found to correspond closely with the substance called kino red by Gerding.

Strong nitric acid decomposes all the constituents of kino, especially when heat is applied; nitric oxide and hydrocyanic acid are evolved; and the liquid contains nitropikric acid and oxalic acid.

Hennig attempted to separate the tannic acid of kino by taking advantage of the fact that ordinary tannic acid is dissolved by acetic acid, and remains in solution even on the addition of water, while the red substance of kino is at first completely precipitated on diluting the solution in acetic acid with water. Raw kino in fine powder was digested for some days with concentrated acetic acid, the liquid evaporated, and the residue digested with very cold water until it began to acquire color. The product obtained in this way was, however, too small.

The fractional precipitation of the solution of kino by means of metallic salts, especially acetate of lead, yielded larger quantities of tolerably pure tannic acid. This salt first combines, apparently in substance, with the "kino red;" subsequent precipitates always contain larger percentages of lead and larger quantities of tannic acid, but the acetic acid set free somewhat disturbs the result. For the reason the aqueous infusion of kino was treated with successive portions of hydrated oxide of lead, but still the tannic acid obtained, though large in quantity, was impure. Finally, Hennig found that the most advantageous process was to precipi-



tate the concentrated alcoholic decoction of kino with subacetate of lead, added drop by drop until a few drops of pure water filtered out of the brownish-red jelly which was formed; the mass was then digested in very cold distilled water, until it began to communicate a color to it, when it was poured off and filtered rapidly. This liquid contained a greater part of the tannic acid. This process may be supposed to consist either in a combination of the acetate of lead with the red coloring matter of the kino only, and that the tannic acid is mechanically retained until the alcoholic jelly is saturated with water, or that both substances form lead salts, and that the contact with water causes a decomposition, in consequence of which tannic acid is set free. It is advisable to use a slight excess of subacetate of lead rather than not, for the quantity of tannate of lead dissolved in that case is insignificant compared with the freedom of the tannic acid from coloring matter.

After the addition of a sufficient quantity of moist hydrated oxide of lead, the slightly reddish colored tannate of lead was separated and introduced into a retort, when it was dried in a stream of hydrogen gas. Hennig obtained from two analyses the following results, corresponding with Berzelius's formula for tannic acid of oak:

C	-	14	-	-	53.16	-	52.7
H	-	10	-	-	3.71	-	3.9
O	-	8	-	-	43.13	-	4.35

The analysis of the lead salt gave:

C	-	18	-	34.02	-	33.00	-	34.55
H	-	18	-	5.67	-	5.93	-	5.92
O	-	10	-	25.19	-	26.67	-	25.23
PbO	-	1	-	35.12	-	34.40	-	33.30

The elements are here nearly in the same proportions as in Rochleder's catechuic acid, and the difference may be owing to an admixture of acetic acid.

Hennig is of the opinion that the red coloring matter so intimately combined with the tannic acid, may be obtained best by treating the aqueous infusion, from which the above-mentioned yellow deposit has separated, with finely powdered hydrated oxide of lead, until the liquid is nearly decolorized. The substance obtained from the lead compound in the ordinary manner, gave on analysis

C	-	11	-	43.65	-	43.71
H	-	5	-	3.31	-	3.31
O	-	10	-	53.04	-	52.98

Basic acetate of lead is better suited to the separation of this red coloring matter than neutral acetate; however, the lead compound prepared with the former, is not one with an excess of base, but shows that the above empirical formula must be multiplied by 5:

C	-	55	-	38.08
H	-	25	-	2.88
O	-	50	-	46.16
PbO	-	1	-	12.88

Hennig calls this substance kinoic acid.

The third substance contained in African kino is very difficult to obtain colorless and free from the above acid. Hennig endeavored to prepare it by digesting the already mentioned spontaneous deposit from the aqueous infusion with successive quantities of water until it was no longer colored upon standing, and gave no reaction with perchloride of iron, then extracting it with strong alcohol, saturating the tincture with neutral acetate of lead and drying the precipitate, collected on a filter, under the air-pump. Analysis gave 25.29 per cent. oxide of lead and

C	-	29	-	41.74	-	41.74
H	-	22	-	4.99	-	4.73
O	-	25	-	53.27	-	53.53

corresponding closely with the formula of Jahn's pectic acid. This substance appears to be more prone to alteration by external influences than the former, and passes finally into ulmic acid, which partly constitutes the residue left on the extraction of kino by water or alcohol.

The quantitative relations of the several constituents of kino may be represented in the following order:

Kinoic acid,  
Tannic acid and a trace of gallic acid,  
Pectin,  
Ulmic acid,

Inorganic salts with an excess of earthy bases.

Bischoff and Mohr have already put forward the opinion that the astringent substance in kino is identical with ordinary tannic

acid, at least in reference to the characteristic precipitation with persalts of iron; and the possibility of obtaining this reaction with various kinds of kino, tormentilla, and other plants, induced Hennig not only to give up the opinion that coccotannic acid is a definite substance, but likewise to regard the different kinds of tannic acid, which precipitate persalts of iron green or grey, and are admitted by Chemists to be in almost every case distinct substances, as intimate mixtures of tannic acid, which gives a blue precipitate with persalts of iron, and some modifying substance, such as a yellow or red coloring matter. He found, however, that the tannic acid from kino differed from that of the oak in two particulars, viz., the solubility in ether and the reaction with potassio-tartrate of antimony; but he considers that the minute and probably inappreciable quantity of kinoic acid mixed with the tannic acid might be sufficient to account for these discrepancies.

The red substance which Hennig calls kinoic acid corresponds with the coloring matters associated with tannic acid in elm bark, catechu, cinchona bark, coffee, &c., and cannot, in kino at least, be regarded as a product of the oxidation of tannic acid, but is probably the derivative of a colorless substance, for, according to Pereira, the fresh juice of the kino-tree has but a faint reddish tint.

This red substance is more readily soluble in alcohol than in cold water, and to it the alcoholic solution owes not only its intense red color but likewise its acid reaction. It gives a yellowish brown precipitate with perchloride of iron, and a brownish red one with acetate of lead. It partly separates from the hot aqueous solution on cooling. From these characters many who have previously examined this substance inferred that it was a resin, an opinion which Mohr opposes. A. W. Buchner states that he has detected catechine in kino, and ascribes to it the production of a green precipitate with persalts of iron. Hennig, however, expresses his conviction that catechin is not present in true kino, and is only a constituent of those drugs which are varieties of catechu, although frequently confounded with kino, viz., *Uncaria* or *Nauclea Gambir*, the product of *Erythrina monosperma*.

The behavior of this red coloring matter towards the tannic acid is remarkable, for it not only adheres to it with obstinacy, perhaps holding it, together with the pectin, for some time in solution, but



likewise gives reactions with acids, bases, and salts, in a manner resembling the conjugate acids. Hennig considers that the red coloring matter of kino originally existed in a colorless state, combined with the tannic acid, and that during its subsequent alteration by the air, in consequence of the absorption of oxygen, the state of combination is not destroyed, but continues, perhaps, even until the formation of ulmin has taken place.

The presence of pectin in kino has already been conjectured by Pereira. He considers "that kino consists principally of a peculiar substance (eucalyptin) analogous somewhat to pectin and tannic acid," and he infers this especially from its behavior with alkalies and the precipitate formed with lime water. Still this precipitate could not be obtained with African kino, which is not the produce of *Eucalyptus resinifera*. The vegetable gelatine is the cause of the kino swelling in water and alcohol, and gives rise to the formation of the substance deposited from solutions of kino, even when the air is excluded, and gradually becoming more insoluble on further treatment with indifferent menstrua. It is this circumstance which has led to the opinion that kino is a gum, although no one has ever obtained from it a substance soluble in water and precipitable by alcohol. But the pectin, in its combinations with earthy bases, or with tannic acid, must behave in a very variable manner with reagents, unless indeed we must ascribe to the difficultly removable kinoic acid (Vauquelin obtained only a *red* gum) at least such an influence upon the pectin that it separates so quickly from cold water, but is then dissolved by alcohol as well as by hot water.—*Pharm. Jour.* Aug. 1853, from *Archiv. der Pharmacie*, February, 1853.

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NOTE ON THE OZONIZATION OF THE OILS OF LEMON AND  
TURPENTINE.

By C. GREVILLE WILLIAMS.

In the *Philosophical Magazine* for June there was a short letter addressed to the Editors by me, "On a Method of distinguishing the Volatile Oils of the Series  $C^5 H^1$ ."

Since that time I have made several experiments on the oils of turpentine and lemons, the results of which, I am in hopes, are likely to lead to a more complete investigation of this part of organic chemistry.

I have alluded in that letter to Schönbein's views of the nature of the principle which gives to some of the oils the power of converting the sulphuret into the sulphate of lead.

I have now found that distillation, or simply raising turpentine to its boiling-point for a short time, is sufficient to destroy its oxidizing property; but I failed to detect free oxygen in the air of the retort during ebullition.

On exposure to the air for twenty-four hours in an uncorked flask, the oil becomes again partially ozonized; and after forty-eight hours I found the power of discharging the color from darkened lead-paper almost as strong as it was previous to the distillation.

It is very remarkable that the residue of the distillation, which was slightly yellow, had in this time acquired more than twice as much bleaching power as the colorless distillate.

I have strong reason to believe, from several of the phenomena which I have observed, that the ozone, instead of being liberated from the heated turpentine as gaseous oxygen, combines with it to form a resin, which remains behind in the distillation.

On this supposition, hydrogen ought to be liberated, but I have not detected it, and probably the quantity is too minute to be separated on the small scale in a state fit for examination; or, if ozone be  $O^2$ , it is possible that it may react in such a manner, that an equivalent of oxygen unites with the turpentine, and the other forms water with the hydrogen; and in support of this supposition I may adduce the fact, that on distilling the ozonized turpentine, the first portion came over cloudy from the presence of water.

It is important to observe, that oil of lemons, as pure as I have been able to obtain it, if exposed for a very considerable period to the atmosphere, acquires the power of discharging the color from darkened lead-paper, though to a very slight extent compared with turpentine; and it results, in effect, that the difference in the behaviour of the two oils is only one of degree.—*Chem. Gaz.*, Sept., 1853.\*

\* [The reader is referred to Dr. Plummer's papers on this subject at pages 398 and 508 of this volume.—EDITOR AM. JOUR. PHARM.]

ON THE PURIFICATION OF GLYCERINE, AND ITS EMPLOYMENT  
IN THE ARTS.

Report by M. CHEVALIER on a Paper by M. Bruère-Perrin.

It is well known that the discovery of glycerine dates from 1782 or 1783; that it is due to Scheele, who made known the fact that oils and fats contain a saccharine matter which is obtained by treating two parts of oil with one part of litharge, adding some water, and applying heat, and afterwards separating and purifying the saccharine matter which is found in the mother-liquor. Scheele published the results of his investigation on this subject in a communication bearing the title *De Materia Saccharina peculiari Oleorum expressum et pinguedinum*, which appeared in the *Transactions of the Royal Academy of Sweden*, in 1783. In this publication Scheele gave the name of *sweet principle of oils* to glycerine, from the fact of its having a saccharine character, and of its solution yielding a syrupy product on being evaporated.

The discovery of Scheele was circulated through the scientific journals, and especially Crell's Journal for 1784, and afterwards the Chemical Works of Bergmann, edited by Guyton de Morveau.

By the subsequent extension of scientific investigation it was established that oils are composed of fatty acids and glycerine, and that the latter, which plays the part of a base, is separated in saponification.

Glycerine, although it has been well known to Chemists, and although it has been produced in very large quantities since the development of the industrial arts in France, was not employed; being considered a product of the laboratory—curious, but not susceptible of any useful application.

The first use to which glycerine was applied was in medicine; in fact, the sweet principle of oils was first employed as a remedy for diseases of the ear by an English surgeon. This application of it having been made known, the attention of medical men was directed to glycerine, and soon afterwards it was recommended as a valuable application for diseases of the skin. Trials of it were made in Paris by Bazin and Cazenove; in London by Yearsley, Wakley, and others; in Russia by Dr. Dallas, of Odessa, who without any hesitation pronounced glycerine to be the best



of cosmetics. It was established from the experience of these medical men that glycerine when applied to the skin softens it, and promotes cicatrisation of cracks and fissures.

The memoir of M. Bruère-Perrin relates to the means of purifying glycerine. It is known that as usually obtained it has a disagreeable odor, and that it has been proposed to purify it by passing through it a current of carbonic acid gas to precipitate the lime which it contains. According to M. Bruère-Perrin this mode of operating only removes the excess of lime present and not that combined with fatty acids.

M. Bruère-Perrin adopts the following method for effecting the object required:—1st. He determines by means of oxalic acid, the quantity of lime existing in the liquid to be purified. 2d. The proportion of lime being thus determined, he adds to the liquid a quantity of sulphuric acid sufficient to convert the lime into insoluble sulphate of lime. 3d. He then concentrates the liquor in a tinned copper pan, stirring it briskly during the concentration by means of an agitator kept in motion by machinery. During the concentration there is a disengagement of vapors, having a disagreeable odor, and a partial decoloration of the liquid takes place at the same time. 4th. When the liquid has acquired a density of 1.075, it is allowed to cool, and then passed through a filter, to separate the sulphate of lime; the excess of acid which has been used in the previous part of the process is now saturated with carbonate of potash, and the liquid again evaporated with constant agitation until it has a specific gravity 1.19, when it will deposit a certain quantity of sulphate of potash in a gelatinous mass; it is then allowed to cool, strained, and the deposit washed with a small quantity of water to which a little spirit has been added. 5th. It is again evaporated, still keeping it agitated, and after bringing it to a specific gravity of 1.24 while hot, it is left to cool, when a further precipitation of sulphate of potash takes place, from which it is filtered.

The product resulting from these operations is of an amber color, free from any marked odor, having a sweetish taste, and being unctuous to the touch. In this state it is treated while cold with animal charcoal, and filtered. It is now free from color or any sensible odor.

Glycerine, like water, mixes with aqueous liquids, with alcohol,

and with acetic acid; it moistens bodies without rendering them greasy; like oil, it is unctuous to the touch, and does not evaporate when exposed to the air. It is easily charged with the aroma of volatile oils; it does not become rancid, nor does it ferment.

M. Bruère-Perrin has introduced glycerine into toilet soaps, and has used it in the preparation of cosmetic vinegar, aromatized spirits, and several other articles of perfumery. We are assured that the soap with glycerine retains its original soft consistence, and that the unctuousity of the glycerine is imparted to the skin. We have tried several of these preparations and verified the descriptions given of them.—*Pharm. Journ.*, Sept. 1853, from *Journal de Chimie Médicale*.

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#### ON THE DETERMINATION OF THE STRENGTH OF PHARMACEUTICAL PREPARATIONS CONTAINING HYDROCYANIC ACID.

By Mr. JAMES ROBERTON.

Of all medicinal preparations there are none which are more liable to variation of strength, and none which require greater care in their preservation, than those which contain hydrocyanic acid. From recent examinations it has been found, that in that particular preparation known as Scheele's acid, these variations have ranged from 4 to 5 per cent. And in the aq. lauro-cerasi I have sometimes failed in detecting the presence of the acid beyond the slightest trace.

In medical practice the evil attending such a want of uniformity in such a remedy is at once apparent.

To the Pharmaceutist the possession of a reliable test for ascertaining from time to time the actual condition of such compounds is of great practical value. For accuracy of determination and ready application I am unacquainted with any means so useful as the cyanometric process, proposed by MM. Fordos and Gélis for the estimation of the commercial value of cyanide of potassium, founded upon the reaction of iodine upon the cyanides, and which consists in the absorption of the iodine up to the point of saturation, beyond which the free iodine becomes immediately apparent.

In the practical use of this test it is only necessary to arrive

at the true standard of strength of the several pharmaceutical preparations containing prussic acid. A test solution of iodine, of a definite strength, is then prepared (three grains to the ounce answers very well,) which may be put into a Gay-Lussac's pouret, from which it is dropped into a certain quantity of the liquid under examination, till a permanent yellowish tinge becomes visible, when the quantity employed is read off from the graduated scale and the strength of the preparation at once determined. The process gives not only the comparative value but the actual per centage of hydrocyanic acid present, as every equivalent of cyanogen absorbs one equivalent of iodine. I have found this process of great practical utility, and recommend it for the adoption of my fellow Pharmacutists.—*Pharm. Journ.*, Sept., 1853.

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#### ON SEBACIC ACID.

BY HENRI CARLET.

Since the discovery of sebacic acid by Thenard, this acid has always been prepared by the process indicated by that illustrious chemist, that is to say, by the distillation of fat. This process only gives small quantities of sebacic acid; consequently the properties of this acid and of its compounds have been but little studied. In his researches upon castor oil, M. Bouis has indicated a ready mode of preparing sebacic acid; at the close of his investigations he had obtained a considerable quantity of it, which he was so good as to place at my disposal. I undertook this investigation with the view of ascertaining the identity of the acid obtained by the old and new processes, and adding some new facts to its history.

The following are the principal results at which I have arrived:—

The acid obtained by both processes is the same substance; its composition, long since indicated by Dumas and Peligot, is represented by the formula  $C^{20}H^{10}O^3$ . The average of five analyses of sebacic acid gave me  $C = 59.25$ ,  $H = 9.07$  per cent.

Sebacic acid in a state of purity is white, solid, and fusible at  $261^{\circ}$  F. The density of the fused acid is 1.1317. It is sparingly soluble in cold, but very soluble in hot water; it is also very soluble in alcohol, ether, and fatty bodies. Chlorine acts



upon it only under the influence of the solar rays; it gives rise to two products of substitution, which are represented by the formulæ  $C^{20} \left( \frac{H^{17}}{Cl} \right) O^8$  and  $C^{20} \left( \frac{H^{16}}{Cl^2} \right) O^8$ . These two products are of a yellow color, and of a pasty consistence at ordinary temperatures.

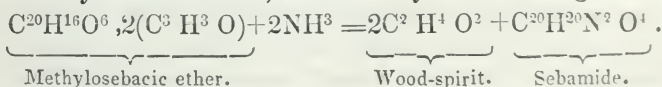
Treated with nitric acid, sebacic acid furnishes succinic acid.

A certain number of salts formed by sebacic acid have been submitted to analysis; their composition confirms that which has been given for the acid. The formation of acid sebates has been proved; these, with the exception of sebate of ammonia, are very readily decomposable.

A new ether has been prepared, the sebacic ether of wood spirit, or methylosebacic ether,  $C^{20}H^{16}O^6$ ,  $2(C^2H_3O)$ . This substance is readily obtained by the following process:—A certain quantity of sebacic acid is dissolved in concentrated sulphuric acid, which is readily effected without any elevation of temperature; wood-spirit is then poured by little and little into the solution, shaking the mixture, and keeping it in cold water to avoid elevation of temperature; a large quantity of water is then added to separate the ether produced, which is washed first with slightly alkaline water, and afterwards with pure water; lastly, it is purified by crystallization in alcohol. Methylosebacic ether is solid at ordinary temperatures; it fuses at  $78^\circ F.$ , and crystallizes in beautiful needles during solidification. It is heavier than water when solid, but lighter when fused; its density consequently differs very little from that of water. It has a very faint odor; at  $545^\circ F.$  it boils without alteration. It is decomposed by potash, giving sebate of potash and wood-spirit.

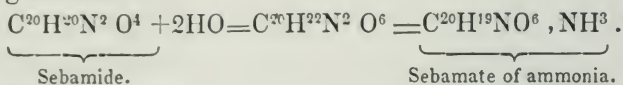
The sebacic ether of ordinary alcohol,  $C^{20}H^{16}O^6$ ,  $2(C^4H^5O)$ , has also been analysed. This substance is fluid at a temperature above  $16^\circ F.$ ; it is lighter than water, and boils at a temperature of  $496^\circ F.$

Lastly, I have repeated Rowney's experiments upon sebamide and sebamie acid, preparing sebamide by the action of ammonia upon methylosebacic ether, as shown by the following formulæ:



I have also proved the conversion of sebamide into sebamate

of ammonia under the influence of water, as shown by the following formulæ :—



My results in other respects are completely in accordance with those of the English chemist.—*Chem. Gaz.*, Sept. 1, 1853, from *Comptes Rendus*, July 25, 1853.

#### OVER-HEATED STEAM APPLIED TO THE CARBONIZING OF WOOD.

For several years past, over-heated steam has been used in numerous industrial operations, and we may say generally that it may be employed in all processes in which a temperature between 100° and 500° C. is required. Among these processes are the extraction of wood-spirit, the continuous baking of bread, the preparation of sea-biscuit, the drying of wood, the preservation of meats, the extraction of volatile substances insoluble in water, the purification of fatty acids, by MM. Leplay and Dubrunfaut, the extraction of the mercury from the residues of zinc amalgam, by M. Violette, and finally, the carbonizing of wood, by the same chemist. M. Violette is a member of the Commission on Powder and Saltpeter, and in this situation he has turned his attention to the ingredients of powder, the manufacture of which still admits of much improvement. The charcoal employed in this manufacture is of a quality intermediate between wood and ordinary charcoal (*charbon roux*), and is produced at 300° C.; at a higher temperature it becomes black charcoal, and at a lower the carbonization is incomplete.

By the old process of heating in closed cylinders, 10,000 kilogrammes of wood furnished 2000 kil. of black charcoal, and 1300 of red. The new process with steam yields a better article in larger quantity, for 10,000 kil. of wood give 4000. The wood immersed in the vapor is readily carbonized, and as it is easy to regulate the temperature of the vapor, charcoal may be obtained of a constant and uniform character. It is some years since that over-heated steam was first adopted in this process, by M. Violette, and now the red charcoal, before employed

only for the finest powder, is in general use for the cheaper kinds, so simple and certain is its preparation by means of steam.

M. Violette communicates now to the Academy some new results. He shows that the change to charcoal takes place differently with different woods, and that the products of the same temperature differ in elementary constitution. Exposed to moist air, the charcoals absorb more water, the lower the temperature to which they were exposed, and the inverse is true of their power of conducting heat or electricity. Charcoal made at  $1500^{\circ}$  C. conducts much better than the charcoal of gas retorts, and serves perfectly for electric illumination. The density increases in the same proportion. When lighted, charcoals remain ignited for a time, which decreases as the temperature of carbonization increases. The charcoal made at  $260^{\circ}$  C. burns more easily and longer; that made between  $1000^{\circ}$  and  $1500^{\circ}$  C. will not ignite or burn.

The most inflammable of all charcoals is that of an *Agaricus*. It takes fire spontaneously at  $300^{\circ}$  C. Other charcoals, prepared at the temperature  $300^{\circ}$  C., take fire in air spontaneously between  $360^{\circ}$  and  $380^{\circ}$ , according to the wood that has afforded them, the charcoals of the lighter woods burning the most readily.

When charcoals are mixed with sulphur, they inflame at a temperature much below that required when alone; the mixture of the two prepared between  $150^{\circ}$  and  $400^{\circ}$  C., is wholly consumed at  $250^{\circ}$  C. On the contrary, when the charcoal employed has been prepared at  $1000^{\circ}$  or  $1500^{\circ}$  C., only the sulphur burns.

To decompose saltpeter, the charcoals require a higher temperature; a heat of  $400^{\circ}$  C. is needed for charcoals prepared between  $150^{\circ}$  and  $432^{\circ}$ , and a red heat for those made between  $1000^{\circ}$  and  $1500^{\circ}$ .

Sulphur decomposes saltpeter at a higher temperature than charcoal requires, viz., at  $432^{\circ}$ . The sulphur alone inflames in common air at  $250^{\circ}$  C., and not at  $150^{\circ}$ , as stated in treatises on chemistry.

The deflagration of powder takes place at  $250^{\circ}$  but its combustibility varies with the charge and the size of the grain. The



powder in grains burns between  $270^{\circ}$  and  $320^{\circ}$ , while powder pulverized, burns between  $265^{\circ}$  and  $270^{\circ}$ .

In view of the facts, M. Violette concludes that it is necessary to revise the charges employed, taking into consideration the actual composition of the charcoal. Trials made with this in view upon hunting powder, with charges calculated according to the actual composition of the charcoal, have given a range much beyond the standard rate obtained with the ordinary powder.—*J. Nickles, in Amer. Jour. of Science and Arts, Sept. 1853.*

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## ON THE PREPARATION OF LACTATE OF PROTOXIDE OF IRON.

By M. C. J. THIRAUT.

In the preparation of lactate of iron by the processes described in chemical works, difficulties are frequently encountered, especially in the concentration of the liquor for the purpose of obtaining the salt in crystals. Even should a first crystallization be obtained without difficulty, on concentrating the mother-liquors in order to obtain a second crystallization, the liquid acquires a reddish tint owing to the peroxidation of the salt, which now refuses to crystallize. Another difficulty presents itself in drying the lactate of iron when obtained. If certain precautions be not taken, the salt, instead of being a yellowish white with a tinge of green, acquires a reddish-yellow color, in which case it is in great measure peroxidized.

All these difficulties, which I have experienced in making the salt for the first time, in addition to the facility with which lactic acid, combined with lime may be artificially prepared, induce me to publish the processes which I have always found successful.

There are two process for obtaining solution of lactate of protoxide of iron, either of which may be employed with equal success. The one consists in the direct action of lactic acid on iron filings, and the other in the double decomposition of protosulphate of iron and lactate of lime. But to whichever of these the preference is given, it is essential, in carrying out the process according to my mode of operating, to have a small quantity of lactic acid in reserve.

The following is the mode of operating if the former of the two processes indicated above be adopted:—

After having prepared lactate of lime in the usual way, by artificial means, it is necessary to test the degree of purity of the salt, as it is difficult to get it always in the same state, for not only does it frequently contain carbonate of lime, but the amount of water present is always variable. It should be ascertained, therefore, what quantity of sulphuric acid of a definite strength is required for the complete decomposition of a given quantity of the lactate.

For the preparation of lactate of iron a certain quantity of the lactate of lime is mixed with the required quantity of sulphuric acid for its decomposition, the latter being mixed with ten or twelve times its weight of water, and allowed to stand in contact with it, without heat, for forty-eight hours, the mixture being stirred from time to time. It may then be filtered through a cloth to separate the sulphate of lime, when a solution of lactic acid, sufficiently pure for the purpose intended, will be obtained.

If it be desired to get the lactic acid in a greater state of purity, the decomposition of the lactate of lime may be effected with oxalic acid instead of sulphuric acid, but for the purpose referred to this is unnecessary, as the small quantity of sulphate of lime which it would retain when sulphuric acid is used would be deposited during the concentration of the solution.

Two-thirds of the lactic acid, obtained in the manner indicated, is to be added to iron filings in an iron vessel, and the action promoted by the application of heat. When the iron ceases to be acted upon, the liquor is to be filtered, and if the directions above given have been followed it will be in a condition favorable to crystallization. The solution, as it filters, should be received in a vessel immersed in warm water, and should be subsequently covered. After five or six days the sides of the vessel will be found to be covered with a crystalline coat of lactate of iron. It only remains to dry the salt, which is very easily effected by first washing it with a mixture of one part of lactic acid and eight parts of spirit, and afterwards exposing it to a temperature of from 60° to 70° Fahr., on filtering paper or on a chalk-stone.

In order to effect the crystallization of the mother-liquor some of the free lactic acid, which was kept in reserve, is to be added

to it, together with some iron filings, and the mixture rapidly evaporated, while the hydrogen gas, resulting from the action of the acid on the iron, is being evolved. The lactate is thus preserved from undergoing peroxidation, and the whole of the liquor may be exhausted of its salt.

An equally satisfactory result with that above described may be obtained by double decomposition, but as it is necessary in this case to use very weak solutions of sulphate of iron and lactate of lime, and subsequently to concentrate the liquor in order to effect crystallization, the peroxidation of the salt must be prevented by keeping up the disengagement of hydrogen in the manner already described.—*Pharm. Journ.* Aug. 1853, from *Journ. de Pharmacie*.

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#### ON PORTLAND ARROW-ROOT.

BY MR. T. B. GROVES.

In the course of lectures on *Materia Medica* at the Pharmaceutical Society, delivered in the session 1850–51, by our late much lamented Professor, Dr. Pereira, he mentioned some facts relative to the manufacture of *Portland Arrow-root*, which led me to infer, that he considered it was carried on to a considerable extent by the inhabitants of the Isle of Portland. Living within a short distance of the island, I have thought it desirable to make some inquiries to ascertain to what extent it is carried on at the present time. Dr. Pereira probably derived his information principally from an article in the *Transaction of the Society of Arts*, vol. xv. (1797,) in which it is stated, that in the year 1797 the gold medal of the Society was awarded to Mrs. Jane Gibbs, of Portland, for producing a sample of starch fit for economic purposes, from materials unfit for the food of man. The *starch*, or *arrow-root*, as it is usually called, was prepared by her crushing in a mortar the corms of the *Arum maculatum*, stirring the mass with water, and straining off the liquors, from which the *fecula* was allowed to subside; this was again washed, and then dried. She stated, and the statement is confirmed by the then Rector of the island, that she had in her possession two cwt. of the starch, and was ready to supply any quantity of the same whenever required, at the price of 11d. per lb. Although there is no doubt that the quantity of the starch manufactured was much greater at that time than the pre-



sent, yet its manufacture was never of much importance ; it is now almost extinct, and the arrow-root never seen out of the island except in the hands of the curious. From my inquiries I have learned, that many years ago it was customary to crop the land only every other year, allowing it to remain fallow in the intervening period, and that in the fallow fields leave was given to the inhabitants to dig for the roots. This custom has been abandoned, and the usual system of rotation of crops introduced. The common, too, has of late years been much infringed upon by the Government for public purposes, and also by speculators for quarrying for stone. These causes have very much interfered with its manufacture, so much so indeed, that a few years since, wishing to procure a sample for a friend, to illustrate a lecture on dietetic articles, I found it very difficult to obtain even a half a pound of it. Within the last week I have ascertained that one old woman is the only person who now prepares any, and she gives as her reason for doing so, that "poor folks now-a-day are glad to turn an honest penny anyhow." At the present time the *Arum* is not very plentiful in the island, although there is still a vast extent of land that will never admit of cultivation on account of its stony character, which, doubtless, produces most of the small quantity now obtained. With the exception of the old woman previously mentioned, liberty is not now obtained to dig in the cultivated fields and pastures.

The *Arum maculatum* is commonly called arrow-root or starch-root, but the vulgar names *cows and calves*, and *lords and ladies*, are also known, though not so frequently used. The proper season for collecting the corms is when the plant has perfected its growth. This is generally in the months of May and June. Those which are collected in May yield a much less proportion of starch than those collected later. The fresh corm is extremely acrid, producing a most disagreeable tingling and pricking sensation in the mouth, when chewed. This acidity I found was not completely removed by toasting. Lindley states that the corms are edible when deprived of their acidity by boiling, but I have never known them so used. This acidity renders it necessary to bruise the corms in a stone mortar, and to avoid, as much as possible, handling them until after they have been washed. The process now employed for the separation of the fecula is the same as that described by Mrs. Gibbs. The corms yield, according to Mrs. Gibbs,

four pounds of fecula to the peck. My informant tells me she obtains on an average three pounds from a peck of corm, more in June, less in May. During the whole season she considers three dozen pounds to be a good average quantity to obtain, and for this she asks 1s. 4d. per pound. It is highly valued by the Portlanders, who say that it is good for sick people, and looks, when prepared, very different from the *arrow-root* of the shops. I have compared it with *Bermuda Arrow-root*, and find that it does not make either so clear or firm a jelly, but is perfectly inodorous, tasteless, and destitute of color. The granules, when viewed under the microscope, appear of an irregular spherical shape, varying much in size, but are on an average much smaller than ordinary starches, except rice starch. The hilum is not very distinctly marked, appearing plainly only in the larger granules.

The *Portland Arrow-root* is, I believe, only made in the Isle of Portland; although there is an abundance of the *Arum* in some of the commons near Weymouth, yet the country people do not appear to know that it is of any use. This will, doubtless, appear strange to those unacquainted with Portland, but when we consider that until with a few years the Portlanders have kept themselves as much as possible aloof from the rest of the world, even forsaking their friends who dared to marry out of the island, and not permitting a stranger to settle amongst them, we can no longer wonder that they have kept their knowledge to themselves. They are probably a race of entirely distinct origin from the inhabitants of the main land; even now they use words which are not understood by us. This *arrow-root* has been prepared by them from time immemorial; and it is very probable, that living on a barren island and depending principally on fish, they may have been compelled by necessity at some time to seek subsistence by preparing the corms for food.

It is a singular fact, that the plant is called *arrow-root* by the islanders, perhaps from its sagittate leaves. May not the *Maranta arundinacea* have derived its English name from the previously known and appreciated *arrow-root* of the Isle of Portland?—*Transactions of the Phytological Club, in Pharm. Journ.* Aug. 1853.

## ABSTRACT OF MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

At a Stated Meeting held 9th mo., (Aug.) 26th, 1853. First Vice President, Charles Ellis, presiding. E. Parrish was appointed Secretary for the evening.

After reading the minutes of the previous meeting, and of the Board of Trustees for past six months,

The Corresponding Secretary produced letters received by him, from Dr. William Darlington, of West Chester, Pa., Asa Gray, Cambridge, Mass., Dr. Justus Leibig, of Munich, Bavaria, and C. Gerhardt, of Paris, acknowledging the receipt of Certificates of Honorary Membership, and thanking the College for the honor conferred by their election. He also informed that Elias Durand, of this city, had called personally to make a like acknowledgment, and had also addressed a similar note to the President of the College.

On motion it was ordered that these letters be preserved in the College Library, with the other similar original manuscript letters belonging to the College. Also, that the manuscript Theses in the hands of the Professors and on file in the College, be suitably bound under direction of the Library Committee of the Board, and added to the Library, and that the future Inaugural Theses be similarly disposed of.

The following Report was read and accepted.

*To the Philadelphia College of Pharmacy.*

The undersigned, a part of the delegation from this College to the American Pharmaceutical Association, Report, that they proceeded to Boston, in accordance with the published Call of the President, and met the Association on the 24th ult., at the Hall of the Massachusetts College of Pharmacy.

The meeting was well attended, and marked with unrelaxed interest to the termination of its sessions on the afternoon of the 26th. The principal subjects that occupied the attention of the Association, were the Statistics of Pharmacy in the United States, the working of the law for the Inspection of Drugs, the sale of Poisons in this country in regard to regulating its present unchecked condition, Pharmaceutical Education as relates more especially to the tuition extended to apprentices and others in the shop, the condition of home adulteration, and the propriety of offering annual prizes for Essays on Pharmaceutical subjects, &c., all of which will be found more fully set forth in the published "Proceedings" herewith presented.

The good feeling and earnestness that prevailed throughout the sittings are, in the opinion of the undersigned, sources of great encouragement to those who look to this movement for many desirable reforms; and they believe, without interfering at all with the proper spheres and functions of the Colleges of Pharmacy, that the American Pharmaceutical Association is destined to elevate the standing of the Pharmacutists of the United States, by bringing together the earnest men of the whole profession and directing their efforts.

CHARLES ELLIS,  
WILLIAM PROCTER, JR.,  
EDWARD PARRISH.

A suggestion relative to the publication of an edition of Latin Labels with gilt letters on a dark ground, was referred to the Committee on Latin Labels with authority to act if deemed by them expedient.



The following Resolution offered by Prof. Procter, and amended with his consent by Prof. R. P. Thomas, was unanimously adopted, and the Corresponding Secretary was directed to enclose a copy thereof to Prof. Royle, of London, and Ellis Yarnall, Jr., of this city.

Whereas, Ellis Yarnall, Jr., of Philadelphia, during a recent visit to London, having obtained through Dr. J. Forbes Royle of London a valuable collection of specimens of East Indian drugs and other productions, being a part of the East India Company's deposit in the Great Exhibition of 1851, and having presented them to this College, therefore it is

*Resolved*, That the Philadelphia College of Pharmacy, appreciating the scientific interest manifested by Prof. Royle, and the liberal views of the donors in remembering its interests, do hereby express their appreciation of the obligation conferred on the Institution, and tender them their thanks.

It was resolved that a Committee be appointed to enquire into the reported abuse of the name of this College in connection with business advertisements.

J. C. Turnpenny, and H. C. Blair were appointed said Committee.

The following communication was read :

The undersigned request to call the attention of the College to the by-law regulating the ingress of members to the College. A few years since, in view of the increasing number of graduates of our School of Pharmacy, to draw a distinction in favor of these in the entrance of the College, and as an inducement to young men to graduate when opportunity was offered them, the by-law was so altered as to make it necessary thereafter for all applicants for membership to undergo a formal examination before the Committee of Examination appointed annually, upon whose recommendation they were to be elected. Since this by-law has been adopted, not a single application for membership has occurred, except from the Graduates of our School, although several gentlemen of good standing have intimated a desire to join us but for the process required. As in these instances the objection appeared to arise rather from pride than fear of inability to pass, and believing that there are a number of apothecaries of good standing who would join us, if our by-law was less stringent, and believing that it is of the utmost importance to the success and power of the College in carrying out the good it was designed to effect, to embrace all the reputable apothecaries in the city within its membership, that the line of membership shall indicate the line of qualification, we propose that a committee of five members be appointed to consider the subject and report a modified by law, if they deem it best, to the annual meeting in March.

SAMUEL F. TROTH,  
WILLIAM PROCTER, JR.,  
ROBERT P. THOMAS.

The suggestion contained in this Communication, to appoint a Committee, was adopted, and the following gentlemen were appointed:—S. F. Troth, W. Procter, Jr., E. Parrish, A. B. Taylor, J. L. Smith, and, on motion, C. Ellis, the presiding Vice President, was added thereto.

The semi-annual election for members of the Board of Trustees, was held and resulted in the election of the following members for one year.

T. P. James, A. B. Taylor, J. L. Smith, Dr. J. Harris, W. J. Jenks, Evan T. Ellis, C. Bullock, H. C. Blair, and W. W. D. Livermore for the unexpired term of Warder Morris resigned. Then adjourned.

EDWARD PARRISH, Secretary pro tempore.

CATALOGUE OF THE GRADUATES OF THE PHILADELPHIA COLLEGE OF  
PHARMACY FROM ITS COMMENCEMENT, WITH THE DATE OF THEIR  
GRADUATION.

(PUBLISHED BY ORDER OF THE BOARD OF TRUSTEES.)

Abbott, J. Henry	1851	Ellis, Evan T.	1847
Allen, John C.	1829	Ellis, William	1834
Andrews, John R.	1848	England, Robert	1846
Babb, Peter	1842	Estlack, Thomas	1844
Bache, Charles L.	1849	Evans, Jonathan Jr.	1835
Bachman, Alexander	1853	Faunce, John H.	1853
Baker, Jacob L.	1846	Finley, John D.	1851
Baker, T. Roberts	1852	Fisher, William R.	1829
Baker, William G.	1842	Garrigues, Samuel S.	1851
Bines, Samuel M.	1848	Goodyear, D. F.	1851
Blair, Henry C.	1836	Goodyear, John	1837
Bonsall, Charles T.	1853	Gormley, George M.	1852
Boyer, Caverly	1843	Grotjan, P. Adolphe	1842
Braddock, Charles S.	1851	Guillou, Alfred	1834
Bringhurst, John	1832	Gutekunst, Frederick	1853
Brodie, Robert C.	1844	Haines, Thomas	1839
Brooks, Edward	1830	Hansford, William P.	1833
Brooks, Henry	1838	Harres, J. Henry	1853
Brooks, Joseph H.	1829	Harris, Thomas W.	1838
Brown, Samuel W.	1833	Hartzwel, Charles	1849
Bullock, Charles	1847	Hasbrook, William L.	1837
Bunting, Samuel C.	1850	Hastings, Samuel	1849
Burton, David F.	1852	Hathwell, Charles	1828
Campbell, James R.	1851	Hendell, Samuel D.	1852
Canby, George	1851	Hendry, Charles D.	1830
Canedo, Cipriano	1852	Heyser, William	1852
Carter, William J.	1842	Hill, Franklin C.	1848
Chapman, William B.	1834	Hæckley, Benjamin F.	1837
Cheston, Elijah, Jr.	1853	Holden, John	1852
Cockburn, James, Jr.	1835	Hopper, Edward	1833
Coggeshall, George D.	1828	Hopkins, James	1835
Conté, Horace	1850	Hopkins, Thomas C.	1839
Cornell, Charles M.	1848	Hughes, Louis	1851
Corse, William H.	1840	Hughes, J. Curtis C.	1847
Costill, Samuel L.	1849	Husband, Thomas J.	1833
Crenshaw, Edmund A.	1849	Jenks, William J.	1842
Crew, James H.	1847	Jones, Alfred	1852
Davis, Benjamin B.	1850	Jones, Daniel S.	1843
Davis, John L.	1852	Jones, Isaac C.	1850
Davis, John W.	1853	Jones, Joshua S.	1843
Davis, Robert C.	1844	Keeney, Caleb R.	1845
Dawes, J. Crawford	1841	Kennedy, Robert J.	1837
Dawson, Alexander	1827	King, William R.	1851
Dickson, John	1846	Kitchen, William K.	1835
Dingee, Charles H.	1826	Knight, William Edwin	1838
Dingee, John Henry	1828	Kuhn, Louis De Barth	1851
Donnelly, Edward	1843	Laidley, Joseph	1850
Douglass, John Wyeth	1840	Laws, James, Jr.	1848
Duhamel, Augustine J. L.	1834	Lee, Clement J.	1835
Durand, Alfred A. B.	1851	Lee, Hiram C.	1846
Elliott, James L.	1837	Leidy, Thomas	1845
Elliott, William D.	1851	Lentner, Samuel	1847

Letchworth, Albert S.	1840	Scholl, Alfred K.	1847
Lewis, John R.	1847	Scott, Thomas L.	1846
Linn, Claudius B.	1838	Selfridge, Matthew M.	1852
Livermore, William W. D.	1849	Sharp, William	1826
Louden, G. Graves	1847	Sheaff, John F.	1853
Martin, Isaac J.	1835	Shinn, Samuel E.	1850
McCormick, Charles	1826	Shinn, Walter	1839
McKim, Andrew	1843	Shreeve, Charles S.	1835
McMakin, Joseph A.	1845	Shrom, Charles F.	1853
Mitchell, George H.	1844	Simes, John W., Jr.	1836
Mitchell, Thomas R. F.	1837	Simes, Samuel	1833
Montgomery, Thomas H.	1851	Simons, Charles Willis,	1833
Moore, Robeson	1829	Smith, Ambrose	1835
Morris, J. H. Morton	1852	Smith, Benjamin R.	1846
Needles, Caleb H.	1841	Smith, Franklin R.	1829
Needles, William N.	1845	Smith, Isaac Jones	1830
Nichols, William St. Clair	1844	Smith, Jacob L.	1843
Ober, Gustavus	1837	Southall, Turner H.	1853
Ogden, Edward H.	1853	Springer, John A.	1848
Olmstead, A. J.	1835	Steele, Oscar	1849
Parrish, Dillwyn	1830	Stevens, Hennell	1853
Parrish, Edward	1842	Stoever, Charles F.	1846
Patrick, George W.	1846	Stokes, Isaac W.	1849
Patterson, Robert M.	1846	Stratton, James	1851
Peltz, Richard	1852	Taylor, Alfred B.	1844
Perot, Joseph J.	1852	Taylor, Alfred La Fayette	1847
Perot, T. Morris	1849	Taylor, William	1851
Peterson, Wetherill	1851	Thomas, N. Spencer	1847
Pleasants, Charles E.	1829	Thompson, Samuel	1834
Pollard, Oscar	1853	Tilghman, John H.	1834
Pollitt, Edmund	1848	Tobey, Averey	1849
Potts, Robert B.	1838	Trimble, David	1834
Powers, Thomas H.	1833	Trimble, Joseph, Jr.	1834
Price, Richard	1835	Troth, Henry M.	1851
Procter, Stephen	1834	Turnbull, Lawrence	1842
Procter, William Jr.	1837	Turner, Joseph M.	1836
Pyle, J. Lindley	1853	Turnpenny, Joseph C.	1833
Ramsden, Robert	1851	Watson, William J.	1853
Rand, Charles S.	1850	Webb, William B.	1845
Reeve, Richard M.	1832	Welding, Watson J.	1833
Ritter, Benjamin I.	1840	Wentz, Silas H.	1844
Ritter, Bradford	1852	Wetherill, Samuel	1842
Robinson, Edward T.	1853	Whartenby, John A.	1846
Rush, Charles S.	1847	Wiegand, Thomas S.	1844
Rushton, Richard	1838	Wiggan, George S.	1848
Santos, Charles A.	1848	Wilkins, Charles M.	1848
Savery, John C.	1851	Woodruff, A. Dickinson	1838
Savery, William, Jr.	1853	Worthington, Henry W.	1838
Scattergood, Joseph	1829	Wright, Peter T.	1846
Schively, William H.	1842		

Total 203.



# Varieties.

EXHIBITION OF THE INDUSTRY OF ALL NATIONS AT NEW YORK,  
1853.

## *Chemical and Pharmaceutical Products, etc.*

### UNITED STATES.

1. Specimens of patent fire and weather proof paint—crude and manufactured. Artificial slates manufactured from the same. William Blake, *manu.* 84 Pearl street, New York City.
2. Magnetic powder for the destruction of insects and vermin without poison. Emanuel Lyon, *manu.* 424 Broadway, New York City.
3. Calcined magnesia. Thomas J. Husband, *manu.* cor. Third and Spruce streets, Philadelphia, Pennsylvania.
4. Medicinal extracts prepared in vacuo.—Hyoscyamus, Aconite, Belladonna, Conium, Taraxacum, &c. Tilden & Co., *manu.* 98 John street, New York City.
5. Specimens of flowers of sulphur and roll brimstone. Frederick Schols, *manu.* 41 Barclay street, New York City.
6. Paris green, sulphate of copper (blue vitriol) and other chemical products, manufactured by Ludwig Brumlen, Poughkeepsie, New York. Adolphus D. Hugel, agent, 36 New street, New York City.
7. Refined camphor, kreosote, naphthaline, benzole, oxyd of mercury (red precipitate), proto-chlorid of mercury (corrosive sublimate), sub-chlorid of mercury (calomel). Charles Pfizer & Co., *manu.* 138½ Water street, New York City.
8. Chemical manure. George A. Lienau, *manu.* Philadelphia, Penna.
9. Medicine chests and medicinal preparations. Rushton, Clark & Co., *manu.* 165 Broadway, New York City.
10. Specimens of ultramarine for calico printing, manufacture of ink, paper, oil and water colors; and lake for decorative painting, printing, &c. Joseph Kohnstamm, *manu.* 4 Tryon row, New York City.
11. Double refined nitrate of potash (saltpetre). George R. Hendrickson, *manu.* 27 Barclay street, New York City.
12. Alkaloids, resinoids, and allied principles—active principles of indigenous and foreign medicinal plants. William Elmer, M. D. and A. D. Hendrickson, *manu.* 15 Hudson Place, New York City.
13. Refined paints ground in oil. Sinclair & Co., *manu.* 169 Front street, New York City.
14. A chart of chemistry, representing chemical composition to the eye by colored diagrams, the areas of which express proportional quantities. Youmans & Birdsall, 18 Park Place, New York City.
15. Fine chemicals for medicinal purposes. Louis Leroy, *manu.* 771 Broadway, New York City.
16. Chemicals and acids for the use of dyers and printers on cotton, woolen, and other fabrics. Thomas C. Jones, *manu.* 757 Washington street, New York City.
17. Fine chemical colors. William Hardegg, *manu.* 102 Fulton street, New York City.
18. Nitric (aqua fortis) and chloro-hydric (muriatic) acid: chloride and oxy-chloride of tin, aqua ammonia, and other chemicals. John D. Perrin, *manu.* Brooklyn, New York.

19. Wash-blue, manufactured from ultramarine. Augustus Bower, *manu.* 62½ Orchard street, New York City.
20. Pure alcohol and deodorized cologne spirit, 98 per cent., made expressly for medical and chemical purposes, perfumery, &c. Christian Paoli, *manu.* Lewis J. Magunson, agent, Springfield, Ohio.
21. Ultramarine blue and green. Adolphus Gomm, *manu.* 60 Nassau street, New York City.
22. Veterinary medicine chest and medicines. Charles Wills, *manu.* 50 East 13th street, New York City.
23. Mineral paint, crude and manufactured. Charles A. Mott, *manu.* Lansingborough, New York.
24. Cutch, sal-soda, nitrate of tin, indigo paste, nitrate of iron, &c. Piepenbring & Co., *manu.* 75 Pine street, New York City.
25. Fine carmine, lake carmine, lake yellow, chrome green, sap green, pink and blue, colors for Daguerreotypes; varnishes for paper, shoes, &c. John Roux, *manu.* 51 Chambers street, New York City.
26. Alcohol, coal-tar products and medicinal preparations. Philbrick, Carpenter & Co., *manu.* Boston, Massachusetts.
27. Samples of enamelled colors and fluxes for glass and porcelain painters. W. J. Hannington, *manu.* 346 Broadway, New York City.
28. Sulphate of quinine, chemically pure and free from cinchonine. Horace Riofrey & Co., *manu.* San Francisco, California. Davis & Henriques, agents, 99 Wall street, New York City.
29. Specimens of saleratus. Thomas Andrews, *manu.* 136 Cedar street, New York City.
30. Artists' colors on porcelain. Oppe & Schmuhl, *manu.* 37 Beaver street, New York City.
31. Specimens of powdered drugs. Haskell, Merrick & Bull, *manu.* 10 Gold Street, New York City.
32. Black lead crucibles. Phœnix Manufacturing Co., Taunton, Mass.
33. A fine assortment of chemicals. Powers & Weightman, *manu.* Philadelphia, Pennsylvania.
34. Chemical preparations. A. Lanning & Co., *manu.* 58 South Front street, Philadelphia, Pennsylvania.
35. Powdered drugs—tragacanth, arabic, kino, myrrh, aloes, and other gums; rhubarb, colombo, and various roots, extracts, &c. Williamson, Mann & Co., *manu.* 94 Front street, New York City.
36. Fine chrome colors. G. N. Popplein, Jr., *manu.* Baltimore, Maryland.
37. Specimens of ferro-cyanide of potassium (prussiate of potash). H. W. Worthington, *manu.* Kensington chemical works, Philadelphia, Pennsylvania.
38. Specimens of chrome green, Chinese blue and American vermillion. James A. H. Bell, *manu.* 149 Maiden lane, New York City.
39. Specimens of stove polish and black for coach painters. J. & J. L. Seabury, *manu.* 156 Chrystie street, New York City.
40. Specimens of essential oils, medicinal extracts, &c., manufactured by the Shakers. David Parker, trustee, Shaker village, New Hampshire.
41. Prepared crystal for polishing. Hastings & Co., *manu.* 37 Fulton street, New York City.
42. Fine specimens of bichromate of potash. Jesse Tyson, Jr., *manu.* Baltimore, Maryland.
43. Osborn's American water colors. Bullock & Crenshaw, *manu.* cor. Sixth and Arch streets, Philadelphia, Pennsylvania.
44. Samples of black-lead crucibles. Daniel Adeë, *manu.* and agent, 107 Fulton street, New York City.
45. Specimens of bronze powder. L. Brandeis & Co., *manu.* 11 Cedar street, New York City.

46. Specimens of *saleratus*. Lawrence Grinnell, *manu.* New Bedford, Massachusetts.
47. Specimens of cologne spirits, deodorized alcohol, and pure spirits, William Sill & Co., *manu.* Chicago, Illinois.
48. Pure vegetable extracts and samples of packed herbs for medicinal and family use, prepared by the Shakers. Edward Fowler, agent, New Lebanon, New York.
49. Citrate of magnesia. Samuel C. Sheppard, *manu.* Philadelphia, Penna.
50. Specimen of salt. Ruffner, Donally & Co., *manu.* Kanawha Salines, Virginia.
51. Specimens of solar coarse salt. Samuel C. Brewster, *manu.* Geddes, Onondaga county, New York.

## GREAT BRITAIN AND IRELAND.

1. New inks for staining oak and mahogany, with specimens of the stained woods. James Hawthorne, *inv.*, 78 Charrington street, London.
2. Samples of colors on porcelain. George Lockett, *manu.* Staffordshire.
3. Preparation to protect grain from smut and from the attacks of caterpillars. David Clarke, chemist, *inv. & manu.*, Bedfordshire, England.
4. Mineral colors, raw and manufactured, for oil paints and paper staining; mineral yellow, dream ochre, Indian red, vermilion, burnt umber, &c. Ellam, Jones & Co., *manu.* Markeaton mills, Derby, England.
5. Samples of colors and chemical productions. William Dawson, *manu.* North British color and chemical works, Leith, Scotland.
6. Specimens of aloin and caffeine. Thomas and Henry Smith, 21 Duke street, Edinburgh, Scotland.
7. Specimens of Peruvian, cinchonine and quinidine barks; sulphates of quinine, cinchonine, and quinidine; Epsom salt; Rochelle salt; phosphate of soda; sulphate of iron; citric and tartaric acids; citrates and tartrates of iron; potash and corrosive sublimate; red precipitate; borax; carbonate of iron; calomel; soda. Howards & Kent, *manu.* Stratford, England.
8. A variety of chemical productions. Dinneford & Co., *inv. & manu.* 172 New Bond street, London.
9. Calcined magnesia and carbonate of magnesia. Thomas Jennings, *manu.* Brown street, Cork, Ireland.
10. Bicarbonate of soda. C. Allhausen & Co., Tyne chemical works, Gateshead, near Newcastle-upon-Tyne, England.
11. East Indian drugs and medical plants. Matthew Pound, 60 Leather lane, Holborn, London.
12. Drugs and chemical productions. Lea & Perrins, *manu.* Worcester, England.
13. Specimen of carbonate and calcined magnesia, and other chemical productions. George Shaw, *prod.*, Glasgow, Scotland.
14. Crystals of sulphate of iron (copperas). Trustees of the late J. Buckley, *manu.* Manchester, England.
15. Large crystals of the sulphate of barytes. John Cooper, Jr., *manu.* Ashton, Cumberland, England.
16. Specimens of the various alkaloids. John Clarke, *manu.* Manchester, England.
17. Dried preparations of British indigenous plants; fluid extracts of taraxacum and colchicum; green and black tea shrubs. James H. Kent, *prod.* Bury St. Edmonds, England.

## ZOLLVEREIN AND GERMANY.

1. Chloroform, ether, and other chemical productions. Dr. L. C. Marquart, *prod.* Bonn, on the Rhine.



2. Variety of chemical productions. Wilhelm Guttler, *manu.* Reichenstein, Prussia.
3. Specimens of black for copper-plate printers. J. Petry, *manu.* Mentz, Hesse.
4. Essential Oils. Spahn & Schimmel, *manu.* Leipsic, Saxony.
5. Chemical preparations for printers and dyers. Krimmelbein & Bredt, *manu.* Barmen, Westphalia.
6. Extracts of aromatic herbs. J. F. Merkel, *prod.* Leipsic, Saxony.
7. Specimens of bronze colors, and metallic leaf. Buckner & Hartmann, *manu.* Nuremberg, Bavaria.
8. Samples of ultramarine colors. Wolf & Co., *manu.* Schweinfurt, Bavaria.
9. Specimens of ultramarine colors. Heinrich Gademan, *manu.* Schweinfurt, Bavaria.
10. Pure kreosote, of great refracting power. F. J. Bronner, *manu.* Frankfort-on-the-Maine.
11. Specimens of ultramarines and mineral colors; mahogany dyes; various ochres and chromes; lacs of all colors; ivory black, &c. Puscher, Brothers, *manu.* Nuremberg, Bavaria.
12. Specimens of ultramarines and Paris blue; blue prussiate of potash. J. N. Adam, *manu.* Rennweg, near Nuremberg, Bavaria.
13. Complete series of German mineral, vegetable and animal substances, used for chemical, pharmaceutical and manufacturing purposes. Gehe & Co. *manu.* Dresden, Saxony.
14. Samples of matches. Riedel & Co., *manu.* Dersdorf, near Wimpstel, Bohemia.
15. Specimens of ultramarine. Wilhelm Buchner, *manu.* Darmstadt, Hesse-Darmstadt.
16. Bronze color and powders. J. Brandies, Jr., *prod.* Fürth, Bavaria.
17. Samples of white lead and superfine colors. Strasburger & Nuhn, *manu.* Thuringen, Saxony.
18. Essential oils. Trepte & Ferke, *manu.* Leipsic, Saxony.
19. Variety of colors. Carl A. Kieser, *prod.* Langeweisen, Thuringen, Saxony.
20. Elixir. J. G. Mueller, *prod.* Leipsic, Saxony.
21. Specimens of manganese. F. Kœnig & Co. *prod.* Langeweisen, Thuringen, Saxony.
22. Nickel, with ultramarine; blue colors: smalt, washing-blue, &c. Electoral Hesse smalt works, *manu.* Schwarzenfeldt, Hesse-Cassel.
23. Ultramarine, exhibited for color and cheapness. Breuninger & Son, *manu.* Kirchheim, Wurtemberg.
24. Blue and green ultramarine, used by printers and varnishers. They resist alom, and the air improves the color. Julius Curtius, *prod.* Duisburg, Rhenish-Prussia.
25. Samples of a variety of colors. George H. Habich, *prod.* Cassel, Hesse-Cassel.
26. Specimens of ultramarine. Ch. Adam Fries, *prod.* Heidelberg, Baden.
27. A variety of chemical productions. Kunheim & Co. *prod.* Berlin, Prussia.
28. Rectified cognac oil, manufactured out of common gin, or thinned spirits. Carl Wissenbach, *manu.* Frankfort-on the Maine.
29. Etherial oil; chemical productions. Lampe & Kaufman, *prod.* Berlin, Prussia; agents, Koop, Fischer & Co., New York city.
30. Specimens of saffre and fine azur-blue smalt. Horstmann & Co. *manu.* Horst-on-the-Ruhr, Prussia; Victor & Achelis, agents, 50 Broadway New York city.

31. Specimens of chremnitz, carbonate and acetate of lead. Gustavus Dietil, *manu.* Eisenach, Saxe-Weimer.
32. Specimens of refined sulphur, cast in figures. Dr. Clemm Lennig, *manu.* Wohlgeleigen, near Manheim, Baden.
33. Two vases of refined sulphur. C. Zimmer & Co., *manu.* Frankfort-on-the-Maine.
34. Specimens of alkaloids. E. Merck, *manu.* Darmstadt, Hesse-Darmstadt.
35. Specimens of ultramarine colors. Dr. C. Leverkus, *prod.* Rhenish Prussia.
36. Munich carmine; lacs, and other colors. H. Siegle, *prod.* Stuttgard, Wurtemberg.
37. Lamp black, ivory black, varnish black, Frankfort black; paste black in liquid, &c. Michel & Morell, *manu.* Mentz, Hesse.
38. Indigo, carmine, &c. Robert Knosp, *prod.* Stuttgard.
39. Stoughton's elixir. J. Robertz, *manu.* Cola, Rhenish Prussia; agent, H. Roesberg, 98 Pearl street, New York city.

## FRANCE.

1. Various kinds of medical preparations for veterinary purposes. Miramont, *manu.* Mune, Oise.
2. Specimens of sundry chemical productions. Lefevre, Sen. Nantes, *manu.* Loire Inferieure.
3. A variety of chemical productions. A. Caron, *manu.* Paris.
4. A variety of colors. H. Vallie, *manu.* Paris.
5. Powder for fermenting. Carton Eckman, *manu.* 10 Rue St. Andre, Lille, Nord.
6. Various specimens of colors and varnishes. Louis Viard, 128 Rue St. Martin, Paris.
7. Specimens of unalterable pills of the iodid of iron. H. Blancard, 51 Rue de Seine, Paris.
8. Samples of ultramarine and azure blue. Bonzel, Brothers, *manu.* Haulbordin, Nord.
9. Specimens of mastic Serbat. L. Serbat, St. Saulve, Nord.
10. A variety of pharmaceutical productions. Reynal & Co., *manu.* (successors of H. Flon), 32 Rue Faitbout, Paris.
11. Flagons of ultramarine blue, applicable to the fine and industrial arts. J. B. Guinnet, *manu.* 9 Place des Carmes, Lyons, Rhone.
12. Extracts of various dye-woods, for calico printing. A. Michel, *manu.* 9 Quay National Puteaux, Seine.
13. Samples of artificial ultramarine, blue, green, and black. Zuber & Co. *manu.* Rixheim, Haut Rhin.
14. Samples of various colored madders, for dying silks and satins, invented by Schwartz. Thomas, Brothers, *prop.* Avignon.
15. Specimens of "Brocchieri Fluid." P. Brocchieri, *pat. & manu.* 21 Rue Louis-le-Grand, Paris.
16. Various drugs and pharmaceutical extracts. Menier & Co., *manu.* 37 Rue St. Croix de la Brettonniere, Paris.

## SWITZERLAND.

1. Mineral water-proof composition for linen, pasteboard, iron, and glass, with various exhibitions of its application to vessels, cloth, thread, ropes, &c., making them perfectly impermeable to water. Frederic Lauterburg, *manu.* 16 Rue de l'Arsenal, Berne, Canton Berne.

## HOLLAND.

1. Veterinary medicines of various descriptions. A. Jorjtsma, *inv.* Dordkum, Netherlands.
2. Specimens of white lead manufactured by a new process. G. A. B. Schierenberg, *inv. & manu.* Horn, near Detmold, Netherlands.
3. Specimens of Friesland green and other colors. Suringer & Sons, *manu.* Groningen, Netherlands.
4. Samples of white lead. Beekhuis, Damste & Co., *manu.* Groningen, Netherlands.
5. Specimens of zinc paints. Prof. S. Bleekrode, *inv.* Delft, Netherlands.

## AUSTRIA.

1. Medical plants, and various chemical and pharmaceutical productions. Wenzel Batka, Prague, Bohemia.
2. Specimens of orange and bright red lead; red and gold litharge; and white lead. Ignatz Von Herbert, *manu.* Klakenfurt, Carinthia.
3. One hundred and eighty samples of colors. Kinzelberger & Co., *manu.* Prague, Bohemia.
4. Various shades of ultramarine; cadmium yellow; red and rose madder. J. Setzer *manu.* Weiteneggk, on the Danube.
5. Specimens of Naples yellow and artificial pumice stone. L. & C. Hardmuth, *manu.* Budweis, Bohemia.
6. Samples of carmine of two kinds. W. Petz., *manu.* Pesth, Hungary.
7. Samples of prepared and unprepared agaric, fusee amadon, medicated agaric, agaric hypsie. A. Bachrich, *manu.* Vienna.

## ITALY.

1. Variety of chemical productions: chemical matches, nitric and sulphuric acids, phosphorus, glue, soda, nitrate of barytes, artificial soda, &c. Albani, Bros., *manu.* Turin, Sardinia.
2. Specimens of sulphate of quinine. Antonia Puccio, *manu.* Genoa, Sardinia.
3. Specimens of yellow sulphuret of arsenic, (orpiment), extracted from the auriferous minerals of the Carri mines in the valley of Ossola. C. Erba & Co., Genoa.
4. Liquid citric acid, white and pure olive oil, cream of soap, &c. Dr. G. Amadeo, *manu.* Turin, Sardinia.
5. Specimens of ergot, extracted from rye. Luigi Parola, *prod.* Cuneo, Sardinia.
6. Samples of the sulphate and citrate of quinine. L. Dufour, *manu.* Genoa, Sardinia.
7. Specimens of prepared ergot. C. J. Bonjean, chemist, Chamberry.
8. Specimens of chemical products. Sclopis, Brothers, *manu.* Turin, Sardinia.
9. Samples of chrome yellow, lake green, Berlin blue, silver white, &c. Augusto Bo, *manu.* Turin, Sardinia.
10. Gelatine capsules of white and red balsam of copaiaba; camphorated cigars—a new invention. Bernardino Scola, *inv. & manu.* Turin, Sardinia.

## BRITISH GUIANA.

1. Barks of curabella and mariaba from Demarara river; carkaralli nuts and wild coffee. E. S. Brotherson, Demarara.
2. Barks of simaruba officinalis, curahara, wadadura (lecthys grandiflora), muraballi, dahli (viola sebifera), and various stems of medicinal plants used as Indian remedies, from Pomeroun, Essequebo. W. C. McClintock, Demarara.



3. Barks of greenheart tree (*nectandra rodiei*) from Demarara river; angostura (*cusparia officinalis*), from Pomeroon; mangrove (*rizophora racemosa*), from Demarara. J. S. Stutchbury, Demarara.

4. Barks of male cashew and the hog plum (*spondias lutea*). George Tiglie, Demarara.

5. Stems of quassia amara. H. M. Greene, Demarara.

6. Stems of boieari. B. Ries, Demarara.

7. Stems of cramata, from Berbice river. John McClelland, Demarara.

8. Accawai nuts (*acrodiclidium camara*), from Demarara river. John Taggart.

9. Physic nuts (*jatropha curcas*). D. Powell, Demarara.

10. Carapa nuts in the capsule (*xylocarpa carapa*). W. C. McClintock, Pomeroon.

11. Creeping plant, supposed to be the juaco. W. P. Latorff, Demarara.

12. *Conuria braziliensis*. W. H. Holmes, Essequibo.

13. Fit-weed (*eryngium fœtidum*) Daniel Blair, Demarara.

14. Hyawa gum (*icica heptaphilla*) W. C. McClintock, Pomeroon.

15. Laurel oil; balsam copaiba; crab oil; sulphate of bebeerine. J. S. Stutchbury, Demarara.

16. Laurel oil. R. J. Knowles.

17. Sulphate of bebeerine from the *nectandra rodiei*. Dr. Hugh Rodie, Demarara.

18. Mocco; mocco juice (*caladium arborescens*). Dr. J. Ross, Essequibo.

[The above lists are taken from the published catalogue of the exhibition, which is understood to be imperfect, in so far as it does not include some of the contributions. Those from Canada for instance. The publication of the whole list will enable our readers to compare the nature of the contributions of the several countries. A special notice of some of the contributions will be found in the editorial department.—EDITOR.]

## Editorial Department.

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EXHIBITION OF THE INDUSTRY OF ALL NATIONS, AT NEW YORK, 1853: CHEMICAL AND PHARMACEUTICAL PRODUCTS.—At this time, when Chemistry plays so prominent a part in the progress of science, of medicine and pharmacy, and of the ornamental arts and manufactures, it was to be expected that the chemical manufacturer would figure largely in an exhibition claiming to represent the industry of all nations. After a pretty thorough examination of what has been sent, we confess to a feeling of disappointment as regards our own as well as foreign countries, in several of which this branch of manufacture is carried on to an extent and with a success not known here. The committee of arrangement have placed chemical and pharmaceutical products and processes in the same class as the coloring substances and dyes and some miscellaneous articles. Of the fifty-one deposits from the United States, noticed in the published list, fourteen are colors and paints, eight miscellaneous, ten pharmaceuticals, and nineteen chemicals. The finest display both as regards quantity, variety, and rarity is that of *Powers & Weightman*, of Philadelphia. The most conspicuous item is a cylindrical tumbler-shaped mass of alum, weighing many hundred weights, just as taken from the crystallizer, except that a section has been removed by the saw to exhibit the beauty of the interior. Among the liquids we observed acetone, chloroform, butyric acid, butyric ether, acetic acid, acetic ether, acetic amylic ether, valerianic acid, lactic acid, and the oils of cloves, caraway, copaiba, black pepper, and pimento. Among the solids, the sulphates of quinia and morphia, strychnia and its salts, brucia, santonin, caffein, meconin, menispermia, gallic acid, lactate of iron, iron by hydrogen, cyanide of copper, &c.

*Rosengarten & Denis*, of Philadelphia, exhibit nitrate of silver, sulphate of quinia, strychnia, sulphate of strychnia, veratria, sulphate of morphia, and piperin. The sulphate of quinia in this lot was particularly fine.

*Charles Pfizer & Co.*, of New York, exhibit refined camphor in discs, naphthaline, benzole, kreasote, calomel, corrosive sublimate, and red precipitate.

Among the pharmaceutical preparations, the powdered drugs of *Haskell, Merrick & Bull*, of New York, the vegetable extracts prepared in vacuo by *Tilden & Co.*, of New Lebanon; the extract of valerian from American grown root, and colorless oil of wintergreen, by *David Parker*, of the *Shakers* of New Hampshire; the magnesia of *Thomas J. Husband*, of Philadelphia; and the general display of Pharmaceutical preparations of *C. Ellis & Co.*, of Philadelphia, deserve particular mention.

GREAT BRITAIN.—The British contribution is very meagre, but a few of the numerous noted English and Scotch manufacturing chemists are represented.

*Howards & Kent*, Stratford, London, exhibit sulphates of quinia and quini-din, and quinoidin, and the barks affording them, Rochelle salt, citric and tartaric acids, corrosive sublimate, calomel, &c.

*T. & H. Smith*, of Edinburgh, have deposited two specimens of crystals of aloin from socotrin aloes, (the principle discovered by them in Barbadoes aloes,) and a fine specimen of caffein, all under glass.

*James H. Kent*, of Staunton, Suffolk, exhibits a variety of dried medicinal plants, enclosed in green glass gallon bottles and sealed. These specimens are particularly deserving, having been dried with the greatest care. The green color of the leaves and the natural tints of the flowers are but slightly impaired by the desiccation. Among them we noticed filix mas, stramonium, helleborus foetidus, digitalis, rosa gallica, aconite, hyoscyamus, belladonna, valerian root, red poppy petals, chamomiles, blue mallows, conium seed, colchicum seed and flowers, buck-bean leaves, dulcamara leaves, daphne, laureola, and many others.

The same depositor exhibits liquor taraxaci, ext. taraxaci fluid, extract taraxaci flores, succus taraxaci, (with the sediment,) succus cotyledon umbilicus, ext. aretii fluidum, ext. chamomæli fluidum, ext. belladonæ fluidum, ext. menyantes trif. fluidum, ext. juglandis fluidum, ext. dulcamara fluidum, ext. rutæ fluidum, and the fluid extracts of white and red poppies. The whole have the appearance of having been carefully prepared, and are very creditable.

THE ZOLLVEREIN AND GERMANY.—The contribution of the German States exceeds that of all other nations, and several of the deposits are remarkable for their great variety, richness, and rarity, and we confess to have been highly gratified with their inspection, containing, as they do, many chemicals that we have never before met with, either in commerce, or in the cabinets of chemists.

*Gehe & Co.*, of Dresden, Saxony, in addition to chemicals, exhibit porcelain and porphyry chemical ware, and an extensive cabinet of materia medica specimens, several hundreds in number, arranged in separate apartments under glass cases. Among these we noticed, rad. asphodeli, rad. asari, rad. aronis, aristolochia longa and rotunda, kouso, (flowers) pulsatilla, melilot, lycopodium herb, gratiola, fol. ilicis aquefolium, fructus cynosbati, fol. lauro-cerasi, cera nigra, cera alba japonica, cortex frangula, Sumatran benzoin, caranna gum, white, green, and red dammar resin, euphorbium, galbanum in tears, hederæ, kino, opoponax, guaiacum in tears, sagapenum, sarcocella, white tacamahaca, sandarac, Siam benzoin, bdellium, oriental bezoars, crab stones, millipedes, dried jujubes, calamine in mass, nag kasser, pomegranate flowers, red coral, baccæ acaciæ, baccæ alkekengi, metallic cadmium, mylabris cichorii, anacardium orientale, mother cloves, Tonquin musk pods, sugar of milk in columns, amber of several qualities, scammony of several qualities, mistletoe, musk root, (Sambul) rad. valerianæ major, salep, turpeth root, saponaria alba, pellatory, Austrian rhubarb in conical pieces, hermodactyles, cypripedium rotundum, briony, etc.



Among the organic principles we noticed, meconin, menispermia, narcotina, ononin, oxycanthin, papaverina, peucedanin, picrotoxin, rhubarbarin, rhein, solania, theobromin, carvacrol, elaterin, quassin, sanguinarina, bebeerin, atropia, asarone, anemonin, æsculin, aconitia, caffein, ergotin, conia (colorless), indigotin, nicotin, xylostin, jalapin, hæmatoxylin, glycyrrhizin, gentisin, filicin, digitalin, emetina, daturia, delphinia, colombin, colocynthin, codeia, chelidonin, cetrarin, cantharidin; brucia, phloridzin, piperin, urea, salicin, mannite, amygdalin, aloxan, quinia, and cinchonia; kinic, valeranic, succinic, uric, picric, uric (or paratartric), benzoic, gallic, pyrogallie, hippuric, kinovic, meconic, anemonic, butyric, and malic acids; cœnanthic, formic, acetic, amylic, butyric, valerianic, and chloric ethers; volatile oils of vitis vinifera, salvia, ruta, (seed and herb,) rosæ (pure), millifolium, melissa, majoram, lauro-cerasus, lauras, hysoppus, cuminum, cardamomi, angelica, and numerous others.

In addition to these organic principles, a great variety of rare and beautiful mineral salts and compounds, all like the preceding, enclosed in glass stopped vials and bottles, and appropriately labelled. As a whole, this is the most complete cabinet of the kind we have ever met with.

The specimens of *E. Merck*, of Darmstadt, Hesse-Darmstadt, are remarkable for their rarity, beauty, and purity, and being, as they are, his own manufacture, they are unsurpassed by any similar deposit in the exhibition. They include veratria (in crystals), menispermia, digitalin, filicin, inulin, iodoform, cantharidin, gentisin, theobromin, atropia, picrotoxin, brucia, asparagin, amygdalin, narcein, papaverina, ononin, cubebin, narcotin, peucedanin, santonin, phloridzin, jalapin, salicin, cinchonia, strychnia, codeia, morphia, caffein; and tannic, hippuric, gallic, pyrogallie, and kinic acids. These specimens are in bottles from two ounces to sixteen ounces capacity, and are in most instances beautifully crystallized.

*O. Herman*, for the Royal Prussian manufactory, deposits the following specimens in gallon bottles:—pure carbonate of potash, iron alum, nitrates of strontia and baryta, succinic acid, gallic acid, glacial phosphoric acid, potassium, sodium, caustic potash, and hyposulphite of soda. The alkaline metals and the phosphoric acid were very fine specimens, and the whole are of excellent quality.

*Dr. L. C. Marquart*, of Bonn, exhibits bromine, chloroform, acetic and acetic amylic ethers, oxide of uranium, and nitrobenzyl, or artificial oil of bitter almonds.

*Spahn & Schimmel*, of Leipsic, Saxony, and *Trepte & Ferke* of the same place, exhibit a variety of volatile oils.

FRANCE.—The French manufacturing chemists have not availed themselves of the exhibition to expose their products. *Menier & Co.*, of Paris, exhibit powdered drugs and vegetable extracts. Of the latter several have been prepared in vacuo, and present the form of desiccated frothy masses. The color indicates careful preparation.

AUSTRIA.—In the Austrian department, *Wenzel Batka*, of Prague, Boho-

mia, deposits a variety of chemical glass ware, agate mortars, crystal models, etc. Some of the articles are beautifully made.

ITALY.—The Italian department contains no deposits requiring particular notice.

Besides drugs, chemicals, and pharmaceutical preparations, chemical and pharmaceutical apparatus, by *Luhme*, of Berlin, and others, is exhibited, but our space does not admit of a further notice at this time. The display in this department is by no means extensive, however, especially in view of the numerous ingenious arrangements that are common in German laboratories.

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MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Our readers will find a full account of the "Proceedings," in this number. The attendance was encouraging, good feeling and earnestness prevailed, and the brethren in Boston extended their usual courteousness and hospitality to their guests. On Thursday evening, (Aug. 25th,) after the spicy discussion of the drug law, the members were invited to the "Pavillion," where everything was "good of its kind, and not only good but the best," a fact which the most ultra "treasury instructions" men did not dispute, after a very thorough inspection. Several medical gentlemen were present, and among them Dr. J. V. C. Smith, of the Boston Medical and Surgical Journal, who, in responding to a call, gave a sketch of Pharmacy and pharmacutists in Egypt and Constantinople, as observed in his recent travels.

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THE INDEX.—To occupy less space we have adopted the plan of a single index in the future, but have included the names of authors in alphabetical order among the other items, distinguishing them by *italics*.

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*The Prescriber's Pharmacopœia: Containing all the Medicines in the London Pharmacopœia, arranged in Classes according to their action, with their Composition and Doses.* By a Practising PHYSICIAN. Altered to correspond with the U. S. Dispensatory. Revised, with additions. Third American from the fourth London edition. By THOMAS F. COCK, M. D. New York. S. S. & W. Wood, 1853. 24mo. pp. 178.

The object of this little book is obvious—it is a pocket companion to the practitioner—intended as a ready reference in composing prescriptions, when the memory needs refreshing in reference to the composition and doses of officinal preparations. The American editor, to render it more useful, in addition to the general adaptation of the formulæ to correspond with the U. S. Dispensatory, has added hints on the uses of medicines, a chapter on diet for the sick, and formulæ for proprietary and other medicines more or less known. So much for the object of the book and the American improvements. So long, however, as American practitioners are served with such Anglo-American hybrid formularies—and in so speaking we by no means confine the remark to the "Prescriber's Pharmacopœia"—so

long will the nomenclature of *written* prescriptions continue to diverge in an hundred ways from the plain and beautiful nomenclature of the United States Pharmacopœia, and apothecaries be puzzled and annoyed by the necessity of remembering several names for the same substance or preparation.

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*Coxe's Companion to the Medicine Chest, and Compendium of Domestic Medicine*; particularly adapted for captains of merchant vessels, missionaries, and colonists, with plain rules for taking the medicines; to which are added directions for restoring suspended animation, the method of obviating the effects of poisons, a plain description of the treatment of fractures and dislocations, and a concise account of Asiatic and spasmodic cholera. Revised and considerably enlarged by R. DAVIS, member of the Royal College of Surgeons, assisted by some of the most eminent physicians and surgeons of the day. First American from the thirty-third London edition. New York. S. S. & W. Wood, 1851. pp. 216. 12mo.

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*General Board of Health. Second Report on Quarantine. Yellow Fever. With Appendices.* Presented to both Houses of Parliament by command of Her Majesty. London, 1852. pp. 409. 8vo.

This valuable report on the question of the propriety and usefulness of quarantine as a protection in yellow fever epidemic, is based on a wide extent of observations in the countries where yellow fever prevails, by numerous observers in the medical corps of the army and navy of Great Britain, and by other medical gentlemen; and on a careful analysis of the facts attending the alleged importation of yellow fever into Gibraltar and other places. The commissioners arrive at the conclusion that the tendency of quarantine is useless and mischievous, and that the true preventive means are in obeying the laws of municipal hygiene, by effecting those "sanitary works and operations, having for their object the removal and prevention of the several localizing conditions, and when such permanent works are impracticable, the temporary removal, as far as may be practicable, of the population of the infected localities."

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*Appendix to the Report of the General Board of Health on the Epidemic Cholera of 1848 and 1849.* Abstract of Report by JAMES WYNNE, M. D., on epidemic cholera as it prevailed in the United States in 1849 and 1850. Presented to both Houses of Parliament by command of Her Majesty. London, 1853. pp. 93. 8vo.

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*Discourses delivered by Appointment before the Cincinnati Medical Library Association, January 9th and 10th, 1852.* By DANIEL DRAKE, M. D. Cincinnati, 1852. Wood & Anderson. pp. 93. 12mo.



COAL TAR PRODUCTS AND DEODORIZED ALCOHOL OF PHILBRICK, ATWOOD & Co., OF BOSTON.—We have received from these gentlemen specimens of benzole, rectified naphtha, toluole, coup oil, naphthaline and asphaltum, derived from coal tar, as prepared at their laboratory. Each barrel of the tar yields about half a gallon of benzole,  $1\frac{1}{2}$  gallons of naphtha, half a gallon of toluole, 5 gallons of coup oil, and 150 lbs. of asphaltum. The first three are beautifully transparent and colorless, and strongly refract light. The coup oil is used as a lubricating oil, in place of the best sperm, to which it is said to be superior, and is the most valuable of the products as an item of manufacture. The benzole, and naphtha, and toluole, are used as solvents for copal, caoutchouc, &c., or for illuminating purposes. The naphthaline has been recrystallized from alcohol, and is in brilliantly white scaly crystals. The asphaltum answers the purposes of ordinary asphaltum for cements and varnishes.

The alcohol of Messrs. Philbrick, Atwood & Co., is deodorized by a process discovered by Mr. Atwood, in which manganic acid is employed. It is entirely deprived of whiskey odor and taste, and is admirably fitted for pharmaceutical use.

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SCHOOL OF PHARMACY. QUALIFICATIONS FOR GRADUATION.—Our junior readers, and more especially those in distant cities where colleges of pharmacy do not exist, are invited to examine the advertisement of our School of Pharmacy, as regards the recent modification of the by-laws regulating the qualifications of applicants for the Diploma of the College. The additions are in italics. Young men at a distance who are desirous of completing their pharmaceutical studies, by graduating in the Philadelphia College of Pharmacy, are thus afforded an opportunity to do so, with the sacrifice of but one season spent in Philadelphia.

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TO CORRESPONDENTS.

"*Laeno*," Baltimore. To give the answers as requested would require far more detail than our time or space will permit. 1. Of Books—Morfit's Chemical Manipulations, and Fresenius' Chemical Analysis. 2. The "fixtures" and implements necessary will depend upon the extent of the investigations pursued. The indispensables are a good balance, a properly arranged gas burner or alcohol lamp, a platina crucible, a blow pipe, one or more small mortars, some capsules of porcelain, watch glasses, flasks, tubes, retorts, and other glass ware, a set of test solutions, test papers, filtering paper and small funnels, all of which can be better understood after reference to Morfit's work. To become "*an ordinary analytic chemist*" is a very different thing from performing an ordinary analysis. The latter may be accomplished by the aid of books and a little experience, just as one may translate from a strange language by aid of a dictionary and grammar. The former requires a great deal of knowledge, only attainable by observation and repeated experience, and considerable skill. 3. As regards "what course of instruction is requisite," we must answer, either the slow and indirect method by books and self tuition, or directly under the guidance of an experienced analytical

chemist. 4. It is possible to attain considerable skill (in the ordinary course of business) in analyzing many mineral substances, especially when pursued with interest. We advise *Lueno* to get Morfit and Fresenius, examine them carefully, and then if he determines to study analysis, begin with the simplest operations and apparatus, and follow and apply them with an unflinching supply of steady perseverance.

"*M. D.*" Kensington, is advised to provide himself with a suitable blank book, in which he should record, 1st, Technical words not understood, in the course of reading; 2d, ideas or processes which he finds reference to in reading and desires to acquaint himself with; and 3d, Phenomena or curious results presented in the course of business that his present knowledge does not enable him to fully explain.

The ninth edition of the United States Dispensatory, Fownes' Chemistry, and Mohr and Redwood's Pharmacy, embrace ample materials for his purposes. The Dispensatory, as the expounder of the Pharmacopœia, is the beginner's *Koran*; but it should be studied with a view to his present wants. In the *Materia Medica* much that is purely botanical and medical may be glanced over slightly in his preliminary study, while the sensible and chemical properties and commercial history of drugs should be carefully read. Having thus acquainted himself with the characters of a drug, he should study the preparations into which it enters, at the end of the book, so as to get a clear idea of the drug and its preparations as a distinct subject. By persevering in this course, noting down difficult and obscure points, he will when ready for the lectures have a solid mass of knowledge upon which to base his collegiate instruction. Fownes' works will assist him in the chemical articles where he needs purely chemical explanations, and the practical details and illustrations of Mohr and Redwood will add interest to his more practical duties.

"*E. H. P.*" encloses to us a letter from an old and respectable physician of Howard county, Maryland, in reference to *Spigelia*. Dr. J. Waters says, "I should like to have some genuine pink root, which I apprehend is not to be had; the article as we now get it is *the root only*, and is not better than chinquepin burr broth: as we used to get it forty years ago it was a powerfully efficacious vermifuge, highly useful in all diseases of children complicated with worms; but now as we get the root only it appears to be perfectly inert." Dr. Waters thinks the plant should be gathered when the flower commences to fade and the top and root used together; he desires to call attention to the subject.

We have not met with the difficulty indicated, where the root is in good condition, nor has *E. H. P.* The tops were formerly gathered with the root, but the practice has been discontinued, from the general belief in the superior efficacy of the root.

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DEATH OF GMLIN.—Science has suffered a great loss by the death of the distinguished chemist, Dr. Leopold Gmelin, the discoverer of the red prussiate of potash, &c., and the author of a valuable and extensive Hand-book of Chemistry, a translation of which is now in the course of publication by the Cavendish Society. He died at Heidelberg on the 13th of April of this year, where he had been for many years Professor of Chemistry.—*Annals of Pharmacy*.

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DEATH OF M. ARAGO.—This illustrious savant died at Paris on the first of October, aged 67 years. His life has been devoted to the sciences, of which he was one of the most eminent cultivators of the present century.

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